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ABSTRACT

This research report examines the interaction of persons and situations. It specifically identifies individual cognitive and motivational characteristics, preferences, and orientations of children which help to determine their relative benefit from different kinds of educational environments. The procedures and results of the main study are described. Fourth-grade children in 50 classrooms in Montgomery County, Maryland, were administered measures of various outcomes during 1973-74 school year. The impact of various classroom dimensions was investigated as well as the possibility that certain cognitive and motivational characteristics of individual children may interact with classroom dimensions to effect a combined influence on educational outcomes. Specific educational outcomes including attitudes, values, and self-assessments were selected and measured, and types of classrooms and children were identified. Models from Solomon's framework for "aptitude-treatment interactions" were used in the analysis. Conclusions show that children benefit from a setting which requires them to experience a mode of activity that they would otherwise avoid, thus providing them with something which they lack. Implications, data tables, and research instruments are included in the report. (Author/ND)

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Introduction

The general issue addressed by the research described in this report is that of the interaction of persons and environments or situations. The notion that both aspects are necessary to account completely for most human behaviors, and that the interaction of the two provides more explanatory power than that of either aspect considered separately is not new to social psychological theory (cf. Lewin, 1948, Levinson, 1959, Coutu, 1949, Ekehammar, 1974); yet it has resulted in little research until relatively recently (e.g., Endler and Hunt, 1969); new theoretical approaches have also emerged recently (e.g. Mischel, 1973, French, Rodgers, & Cobb, 1974). There has probably been more person-environment interaction research in education than in any other area. This research has mostly involved manipulated environmental or situational variables in short-term experiments, and has primarily investigated fairly specific cognitive abilities as the individual characteristics.

Our purpose has been to expand on this research by looking at "natural state" ongoing educational situations (rather than artificial, manipulated ones), and to include a broad range of orientations and dispositions as well as general measures of achievement level and intellectual ability as the individual difference characteristics. It is our opinion that investigating natural situations in their multivariate complexity is the most promising strategy for making predictions about behavior and making useful applications in new situations.

The overall goal of this investigation was to identify individual cognitive and motivational characteristics, preferences and orientations of children which help to determine their relative benefit from different kinds of educational environments. The research began with the categories of "open" and "traditional" as general types of environments, but specific classroom types were later defined empirically (based on observations and descriptions of classroom activities). It was hoped that any characteristics of children discovered to interact with classroom type to influence educational outcomes would also prove to be useful in counseling parents and children in situations where choices between classroom and/or school alternatives were to be made. Thus, it was hoped that the research would contribute to a solution of the important practical problem of optimizing the congruence between the individual child and the classroom setting.

Prior Research

An initial exploration of the research relating to "open education" led to rather inconclusive results. Little such research had been done when this study was initiated. Although the research output has greatly accelerated in the past two or three years, it would still be difficult to draw definitive conclusions from it.

Aside from research, a great deal has been written about "open education"--some describing it, some promoting it, some dispassionate, some polemical (e.g., Plowden, 1967; Blackie, 1967; Kohl, 1969; Silberman, 1970; Featherstone, 1971; Hassett and Weisberg, 1972). Several attempts have been made to analyze the characteristics of open education in terms of basic dimensions (Bussis and Chittenden, 1970; Walberg and Thomas, 1971), and classroom inventories and observation forms have been developed in order to determine objectively the degree to which various classes meet the several criteria of "openness" (Walberg and Thomas, 1971, Traub, Weiss, Fisher, and Musella, 1972).

The most inclusive research investigation to date, in terms of the variety of variables considered, is probably that of Minuchin, Biber, Shapiro, and Zimiles (1969). A small number of "traditional" and "modern" schools were compared and found not to differ on standard measures of academic performance, but to show differences favoring students in the "modern" schools in cooperativeness, efficiency in working in groups, interpersonal warmth, and creativity. Questions have been raised about the comparability of the "traditional" and "modern" schools in this study, however.

In another study, Haddon and Lytton (1968) compared creativity measures of British 11-12 year old children in "formal" and "informal" schools just prior to completing their "primary" school careers. The formal and informal schools were different mainly in that the latter emphasized self-initiated learning to a much greater degree. Children from the informal schools scored significantly higher on the measures of divergent thinking (creativity), and also showed higher correlations between creativity and intelligence. A follow-up study with the same children after a four-year lapse (Haddon and Lytton, 1971) found that the between-group difference in creativity was maintained. Similar results were obtained by Oberlander and Solomon (1972), showing that students in "multi-grade, multi-age" classrooms scored significantly higher on verbal and nonverbal measures of fluency, flexibility and originality (all components of creativity) than did students in "self-contained" classrooms. Scores on one creativity index, "alternative uses" were found to be higher for children in open classes by Owen, Froman and Calchera (1974), while Wilson, Stuckey and Langevin (1972) found "productive thinking" greater in "open plan" schools. Ramey and Piper (1974) however, reported reversed differences for different types of creativity: children in an open school scored higher on "figural creativity" while those in a traditional school scored higher on "verbal creativity."

Children in open rather than traditional classrooms show more positive attitudes toward school, according to studies by Wilson, Stuckey and Langevin (1972), Traub, Weiss, and Fisher (1974), Tuckman, Cochran and Travers (1974), Epstein and McPartland (1975), and Groobman (1976). However, Klaff and Docherty (1975) found no systematic open-traditional differences in attitude toward school. Some of these same studies also found that students in the open classes had more positive self-concepts, as did a study by Franks, Marolla, and Dillon (1974). On the other hand, Groobman (1976), Klaff and Docherty (1975), and Ruedi and West (1973) did not find significant differences in self-concept between the two types of class. Traub, Weiss, and Fisher (1974) also reported evidence of greater independence, initiative and autonomy in open (suburban) schools, while Epstein and McPartland (1975) found greater self-reliance in open classrooms, and Reiss and Dyhdalo (1975) reported that children in open-space classrooms showed greater persistence at difficult tasks. Wilson et al (1972) found no differences in "curiosity," Owen et al (1974) found none in "locus of control," and Wright (1975) found none with measures of personality and cognition between the two types of class. Academic expectations and aspirations were found not to be significantly differentiated between class types in studies by Groobman (1976) and Epstein and McPartland (1975).

Varying results have been reported concerning academic achievement in open and traditional schools. Harckham and Erger (1972) found greater reading achievement in British inner-city "informal" than "formal" schools, but found no differences between the two types of schools in suburban areas. Schnee (1975) found school openness to relate positively to reading scores. No significant overall differences in academic achievement were found by Tuckman et al (1974), Owen et al (1974), Epstein and McPartland (1975), or Groobman (1976). Traub et al (1974), however, found higher achievement test scores in traditional than in open inner-city schools and Ruedi and West (1973) found "academic adequacy" (self-rated) to be greater in traditional than in open sixth grade classes. Better achievement in traditional than open classes has also been found by Rentfrow and Larson (1975) and by Wright (1975).

In summary, the above studies generally show some evidence of superiority in creativity, liking for school, self-reliance and initiative for the "informal" or "open" classrooms, mixed results concerning standard indices of academic achievement, and as yet insufficient evidence concerning various psychological characteristics, values, social behavior, and the like. It is interesting that many of these latter characteristics are precisely those which developers of "open" programs have stated as primary goals. Measures of such characteristics constituted an important aspect of the present research.

It is possible that previous research on open education has found relatively few overall significant differences in educational outcomes between open and traditional classes because in most cases individual characteristics of the children have not been taken into account. A similar mean score between children in the two types of class may be masking, for example, a positive relationship between an individual characteristic variable and an outcome variable in open classes and a negative relationship between the same two variables in traditional classes.

The notion that particular children may enjoy and perform well in classrooms which are consistent with their abilities, learning styles, needs, interests, motives and/or values is not a new one but has only recently become the focus of concentrated research attention, under the various names "trait-treatment interaction," "attribute-treatment interaction," "aptitude-treatment interaction," or, more generally, "person-environment interaction." Recent reviews of this area, including discussion of theoretical and methodological issues, have been presented by Cronbach and Snow (in press), Berliner and Cahen (1973), Bracht (1970), and Hunt (1975). A general discussion of relevant theories and research may be found in Walsh (1973). Much of this research has employed short-term experiments and most of it has used college students as subjects. In one of the most comprehensive of these studies, McKeachie (1961) found that students with strong needs for affiliation did best in classes of "warm" teachers; intelligent students and those with strong needs for power did best in classes which provided them with opportunities for assertion; students with strong needs for achievement did best with teachers who provided many "achievement cues;" and anxious students did best in classes which were clearly organized and structured.

Grimes and Allinsmith (1962) reported some similar results concerning anxiety: highly anxious (and compulsive) children progressed better in reading with a structured (phonic) treatment than with an unstructured (whole word) treatment. Dowaliby and Schumer (1973) found that anxious students learned best in "teacher-centered" (rather than "student-centered") classes, while Tallmadge and Shearer (1971) found that anxious subjects did better with an "inductive discovery" treatment and that low-anxious subjects did better with an "expository deductive" treatment. Calvin, Hoffman, and Harden (1957) found that less intelligent students did better when problem-solving sessions were conducted in an authoritarian rather than a permissive manner, while more intelligent students did equally well with either approach. Hunt (1971) reviewed a number of studies showing that a "match" between the "conceptual level" of a student and the structuredness of a program related to optimal gains.

Beach (1960) demonstrated that "sociable" college students learned more in a small-group section, while less sociable students learned more in a lecture section of a college course. In a study by Domino (1971), students scoring high on the personality measure, "achievement via conformance" learned most and were most satisfied in a class taught in a "conforming" way (lectures, high structure), while those scoring high on "achievement via independence" did so in one taught in an "independent" way (active student participation, unstructured). Haigh and Schmidt (1956) gave students the choice of being in directive or nondirective classes and found, as they predicted, no differences in outcome between the groups, each being in its preferred setting. The study is flawed, however, by the lack of control groups.

McKeachie (1963) has summarized some of the studies in this area as showing "...that a certain type of student, characterized as independent, flexible, or in high need for achievement, likes and does well in classroom situations which give students opportunity for self-direction." (p. 1158). Since open education characteristically provides students with extensive opportunity for self-direction, this statement bears direct implications for open education, even though the studies on which it was based were not concerned with this form of education as a distinct and separable category.

More recently, a few studies have explored such possibilities in settings more directly relevant to the distinction between open and traditional education.

White and Howard (1970) found that underachieving seventh grade boys who believed that the outcomes of their efforts were externally controlled did better in a self-directed than a teacher-directed class, while those boys who believed that they themselves were responsible for the outcomes of their efforts did equally well in either type of class. The same independent variable, "locus of control" was used in a study by Judd (1974) with somewhat different results: he found that those believing in internal responsibility for outcomes tended to have more positive concepts of themselves as learners and more positive attitudes toward school when in "open-space" schools, while those believing in external responsibility for outcomes had more positive self-concepts and school attitudes in traditional schools.

"Internals" were also found to be more satisfied in open classrooms by Arlin (1975), and to perform better in a "low-discipline" mini-course (while "externals" performed better in a "high-discipline" one) by Parent, Forward, Canter, and Mohling (1975).

Children low in anxiety were reported to score higher on creativity in open than in traditional classes by Klein (1975). Papay, Costello, Hedl and Spielberger (1975) found low-anxious 2nd graders to perform better in mathematics in traditional classes while high-anxious 2nd graders performed better in "individualized multiage" classrooms.

Ward and Barcher (1975) reported that high-IQ children obtained higher reading and creativity scores in traditional than in open classrooms.

A few of the previously-cited studies which compared overall effects between open and traditional classrooms also included some consideration of interactions with child characteristics. Thus Epstein and McPartland (1975) reported evidence at several grade levels of a more positive relationship between school "openness" and achievement for high socioeconomic-status children than for low SES children; they also examined interactions with other measures of family environment (e.g. authority structure), but found no consistent significant effects. Rentfrow and Larson (1975) found that black girls showed better reading and mathematics achievement in open classes, while black boys and white children in general did better in traditional classes. Reiss and Dyhdalo (1975) reported that "persistent" boys learned more in open classrooms, "nonpersistent" boys, in traditional ones.

Too few of these studies have been done to date with too little consistency in results, to lead to clear judgments about the relative benefits for different types of children of the different classroom settings. They do constitute sufficient evidence to suggest, however, that such an approach may be potentially fruitful. The present research was designed to explore such child-classroom interactions intensively.

In addition to mixed results, the previous studies of open and traditional education (including those investigating interactions with person characteristics) present two methodological problems: 1) they usually used a priori operational definitions of the classroom categories in question ("formal" vs. "informal," "open" vs. "traditional," etc.) and 2) each category was generally represented by a very small number of classrooms. While a priori categorization has the advantage of convenience, it rules out the possibility of discovering that intermediate levels or particular combinations of the elements of the contrasted approaches may in fact be the most effective. It also makes it impossible to determine whether certain components or aspects of a category such as "openness" are more important than others in achieving any effects found, or whether certain aspects are effective only when combined with certain other aspects. Furthermore, representation of a category by a small number of examples increases the likelihood that any differences found between categories may actually be due to extraneous but correlated differences (such as teacher personality, type of student population, locality, and the like).

General Plan for this Research

For the above reasons we concluded that the best approach to take in research on these issues, given the current state of knowledge, would be to include a fairly large number of classrooms, to obtain measures of classroom atmosphere and practices, and teacher and student behaviors, relevant to all the dimensions which have been suggested to be crucial to the distinction between "open" and "traditional" education (plus any additional dimensions which seem plausible or theoretically relevant), and to have a broad range of types of classrooms represented so that the effectiveness of intermediate points along these dimensions--not just the extremes--could be investigated.

In addition to investigating the overall (or average) impact of the various classroom dimensions, the present project has had as a major focus the investigation of the possibility that certain cognitive and motivational characteristics of individual children may interact with these classroom dimensions to effect a combined influence on educational outcomes. Each of the individual characteristics selected for inclusion in the study was expected to relate to performance differentially in different types of class; i.e. we hypothesized that children with certain characteristics would "fit" best and therefore perform best in particular kinds of classes. These characteristics included the student's intrinsic motivation, achievement motivation, fear of failure, need for approval, structured role orientation vs. personal expression orientation, locus of control, locus of instigation (referring to the degree to which one feels responsible for initiating his own activities), and class characteristics preferences.

A broad range of educational outcomes was also selected, so that those considered important by proponents of each type of education would be represented. Therefore, it was decided to measure standard academic achievement, inquiry skill, creativity, writing skill, attitudes toward self, school, and other children, orientations toward educational tasks, and the children's own evaluations of their learning and their class.

The research plan called for two studies. The first was to be a "pilot" study, to be done in six classrooms, three open and three traditional; its primary purpose would be to develop and refine instruments, measurement techniques and analysis procedures. It was also expected that this study would provide preliminary data relevant to hypotheses about which student characteristics "fit" best in different kinds of classrooms. The second, "main" study was to involve a much larger number of classrooms so that measures of more specific and descriptive dimensions than "open" and "traditional" could be obtained and investigated for direct effects on educational outcomes as well as for interactions with the individual child characteristics.

This report concentrates on describing the procedures and results of the main study. A full description of the pilot study was presented in a previous report (Solomon and Kendall, 1974). Supplementary analyses from the pilot study have been reported in two additional papers (Solomon and Kendall, 1975; Solomon and Kendall, in press). A brief summary of the methods and findings of the pilot study follows:

The Pilot Study

In the early spring of 1973, numerous measures of individual preferences, motives, and orientations were obtained from fourth-grade children in two sets of classes, three "open" and three "traditional." Some of these measures were developed for this research, some were adapted from our own prior research, and some were adapted from, or taken directly from the research of others. Among these measures were achievement motivation, fear of failure, personal expression vs. structured role orientation, locus of control, intrinsic motivation, social desirability, "bureaucratic" orientation, and preferences for various sets of hypothetical class characteristics. Later in the spring, detailed structured observations of the activities and organization of each class were made by four teams of two observers, each team making one visit to each class. Near the end of the school year, questionnaires measuring inquiry skill, creativity, several school-related attitudes, and self- and class-evaluations, as well as the California Achievement Test were administered to the children. At the same time, teachers filled out questionnaires describing their class activities, organization and objectives, and also made a set of 30 ratings of the behaviors, orientations, skills, and abilities of the children in their classes. The children were also asked to indicate their parents' occupations on one of the questionnaires; a crude index of socioeconomic status was later derived from this. Measures of the children's academic ability and performance taken a year previously, at the end of the third grade, were obtained from school records. Complete data were available on 92 children, 56 boys and 36 girls.

Comparison of the two types of class in terms of the observation and teacher description categories showed that students in the open classes had more opportunity to make choices and influence decisions about class activities, were more likely to be involved in group activities, and were more likely to cooperate with one another. There were more varied activities, more different activities going on simultaneously, and more stimuli of various sorts in the open classes. Teachers in open classes spent more time consulting with students and leading discussions, while those in traditional classes spent more time lecturing, making formal presentations, and disciplining students.

The various sets of measures obtained on the individual children were "factor analyzed." The following names were assigned to the factors which emerged in each set:

The third grade ability and achievement measures were included in a single factor analysis and produced a single factor, called prior achievement.

The measures of preferences, orientations, and motives were analyzed together, resulting in four factors, compliant-conforming orientation, personal control orientation, autonomous achievement orientation, and preference for open situations.

The various measures of cognitive skills and knowledge given at the end of the fourth grade were included in a factor analysis, and produced three factors: achievement test performance, inquiry skill, and creativity.

Five factors were derived from the various measures of school-related attitudes: self-confidence, democratic attitudes, concern for others, decision-making autonomy, and value on self-direction.

The self- and class-evaluation items produced three factors: enjoyment of class, social involvement (friends), and perceived disruptiveness in class.

Five factors emerged from the analysis of the teachers' ratings of the students: autonomous intellectual orientation, democratic, cooperative behavior, perseverant achievement behavior, involvement in class activities, and undisciplined activity.

The first five of the above factors, plus the index of "socioeconomic status," a derived measure of "impulsiveness/activity level," and a dichotomous categorical representation of "type of class" (open or traditional) were used as independent variables in a series of stepwise multiple regression analyses (done separately for boys, girls and the total sample) with each of the remaining factors, plus a measure of "writing quality" as dependent variables. Prior achievement and socioeconomic status were entered first in each analysis, so that all other effects were those which occurred after these had been accounted for. Interactions were incorporated into these analyses by entering the products of the type-of-class measure (scored 1 for open, -1 for traditional) and each of the other independent variables. These product terms were the last set of variables entered into each equation, following the entry of all the independent variables.

Although there were numerous significant direct relationships between the personal orientation and outcome measures, the primary concerns of this research have been with the interactions between individual characteristics and type-of-class, and with any overall effects of type-of-class on outcomes; only these latter two types of effects are discussed in this summary.

The patterns of relationships with the various outcome measures were generally different for boys and girls. The measures of autonomous achievement orientation, preference for open situations, and socioeconomic status produced the largest numbers of significant interactions with type-of-class for boys, while the measures of prior achievement, compliant-conforming orientation, and personal control orientation produced the most for girls. Three significant type-of-class main effects were found for boys; those in open classes were more involved in class activities, but persevered with achievement tasks less and did less well on the fourth grade achievement tests (when performance on the third grade test was accounted for) than did those in traditional classes. Girls in open classes scored higher on decision-making autonomy, self-direction, democratic, cooperative behavior, and involvement in class activities than did those in traditional classes. Only two of these outcome measures were not also influenced (and therefore accounted for more completely) by interactions--involvement in class activities for boys and democratic, cooperative behavior for girls.

The obtained interactions were generally interpreted as showing ways in which individual child characteristics fit in with the orientations and activities typical of the different types of class. The autonomous achievement orientation was considered more consistent with the typical activities of open classes (involving greater exploration and self-direction). The higher boys scored on this orientation, the more likely they were to be creative and concerned for others in open classes and the less likely they were to persevere, perform well on achievement tests, or show undisciplined activity in open classes.

The personal control orientation was judged to be more appropriate to an open class situation, which allowed children greater opportunity to exert effective influence on the selection, initiation and outcomes of their own activities. Girls scoring high on this orientation showed greater decision-making autonomy and autonomous intellectual orientations in open than in traditional classes.

Children who stated preferences for open situations were expected to be more comfortable and to find more acceptable outlets for the expression of their needs in open than in traditional classes. Boys who stated such preferences scored higher on autonomous intellectual orientation, decision-making autonomy, and writing quality in open classes. Children in the total sample who scored high on preference for open situations persevered more in open classes.

The interactions obtained with socioeconomic status were also interpreted in terms of children's comfort with the different types of class. It was thought that higher-status children might feel more familiar and comfortable with the kinds of activities prevalent in open classes and that lower-status children might feel more comfortable in traditional classes. It was found that boys of high socioeconomic status were more self-directing in open classes and those of low socioeconomic status were more socially involved and performed better on the achievement test in traditional classes.

The compliant, conforming orientation was considered more consistent with the norms and expectations of traditional classes; girls scoring high on this measure were more socially involved in traditional classes.

An interaction showing that impulsive/active girls were more self-directing in open classes was attributed to a greater opportunity for girls with this orientation to express and satisfy needs in the open class situation.

A high level of prior achievement was considered possibly to represent a potential for skill development. Boys with high levels of prior achievement showed more creativity in open classes, where there were presumably more activity options relevant to the development of such skills. Prior achievement was also considered an attribute more likely to be highly valued in the traditional classes; girls with high levels of prior achievement were more socially involved and less undisciplined in traditional than in open classes.

For both boys and girls, there were many more instances in which there were significant interactions but no significant type-of-class main effects than there were instances of significant type-of-class main effects but no significant interactions. This was considered to verify the potential fruitfulness of an approach which investigates the joint effects of individual characteristics and classroom characteristics over that of an approach which is limited to investigating the overall effects of classroom characteristics alone.

Plan of the Main Study

Design. Fourth-grade children in 50 classrooms were administered measures of various "outcomes," including achievement test performance and other cognitive skills, self-esteem, and various social attitudes and values at both the beginning and end of the 1973-74 academic year. Measures of several school-related motives, preferences and orientations of the children were also obtained near the beginning of the school year. The 50 classrooms were not pre-selected as to "openness" but represented a broad sampling of various classroom types. Each classroom was visited by trained observers on eight different occasions during the school year. These observers made tallies and ratings of a great many categories of teacher behavior, student behavior, classroom activities, and classroom "atmosphere."

Data analyses. The data analyses were primarily aimed at investigating the joint (as well as separate) effects of classroom characteristics and child characteristics (e.g., preferences, motives, etc.) on the various indices of outcomes. Two major data analytic procedures were used throughout this study, "factor analysis" and "analysis of variance." Factor analysis was used to reduce large numbers of items or scores in particular sets of data to smaller numbers of basic characteristics or dimensions. Analysis of variance was used to investigate joint effects of child characteristics and classroom characteristics on each outcome measure.

Factor analysis is a statistical procedure for grouping items or scale scores based on their interrelationships, (i.e. intercorrelations) allowing one to identify a smaller number of underlying dimensions, or "factors." Each factor is defined through an examination of the "loadings" of all items on it. (A "loading" is essentially the correlation of the item with the overall factor.) The items with the highest loadings are the most important in determining the meaning of the factor. The factors in most of the analyses in this study were "rotated" to "orthogonal simple structure;" the rotated factors resulting from this procedure tend to be uncorrelated with each other and to be maximally simple and meaningful.

A combination of methods was used to determine the number of factors to retain and rotate in the various analyses to be described later in this report. Generally, the number of factors with eigenvalues of one or greater was considered an upper bound, while the number indicated by the "scree" test (Cattell, 1966) was considered a lower bound. Different rotations within this range were examined, and the one which produced the most meaningful groupings of items was retained, in each case. Each of the factor analysis tables which appear in this report present the item loadings, communalities (h^2--the combined contribution of an item to all the factors within one factor analysis), eigenvalues (the variance accounted for by a given factor), the total variance in the set of items, and the percentage of the total variance accounted for by each factor.

Analysis of variance is used to determine the strength of effect of one or more "independent" variables upon a "dependent" variable. When the analysis includes two or more independent variables, it partitions the overall effect on the dependent variable into several sources; those referring to the direct (or "main") effect of each independent variable by itself, and those referring to joint (or "interaction") effects of various combinations of the independent variables. A result showing that highly motivated children learned best in "self-directed" classes and that poorly motivated children learned best in "teacher-directed" classes would be an example of an interaction; the effect is a joint product of the two independent variables, child motivation and class-type.

The analyses of variance in this study were done with the data organized so that the individual class was the unit of analysis. This was deemed appropriate because the children were grouped in classes and the different children within a single class could not be considered to be independent. The specific procedures used to accomplish this are described later. This was not done in the pilot study because there were an insufficient number of classrooms to make the procedure feasible.

Some other specialized data analysis procedures were also used in the study, including cluster analysis and multiple regression analysis. These were not used as pervasively as the two just mentioned, and will be described briefly in the sections in which they are introduced.

Methods of Data Collection

Recruitment of Classrooms and Children

While the pilot study had involved a small number of classrooms, designated beforehand as either "open" or "traditional," the intent with the main study was to avoid pre-selection according to class type, but rather to try to have a broad range of classrooms represented. The initial plan was to attempt to recruit 50 classrooms; this seemed about the maximum number that could be handled given the research design and the resources available.

The research plan and objectives were presented to several area principals' meetings (the county is divided into six administrative areas). Those principals who expressed interest were given written descriptions of the plan and forms to return after consultation with their fourth grade teachers. In some cases, visits to the schools were also made and the plan discussed with the teachers. Because the research plan required obtaining descriptions of classroom characteristics which would be equally representative of the environment experienced by all the students in any particular class, it was necessary to eliminate classrooms which were very "departmentalized;" therefore classrooms which did not contain a minimum of 12 children who spent at least half of their time together were not included in the sample. For a time, it appeared that the sample would include more than 50 classrooms. At the last minute, however, one school (from which we had expected four classrooms) pulled out of the study. Replacements were obtained, to bring the total to 50.

The 50 classrooms in the study were in 26 schools spread throughout the county but concentrated more heavily in the more urbanized areas (as, of course, is the school population). Early in the fall of 1973, letters describing the project were sent to parents of all fourth grade children in the selected classrooms, asking their permission for their children's participation. Children of those who refused (about 10 in all) were not given any of the tests and questionnaires, and were not rated by teachers. The final sample of children (after eliminating a few with very incomplete data, or with evidence of consistent "patterned" responses on several of the administered questionnaires and tests) was 1,292 fourth graders, 645 boys and 647 girls. Other grade levels were represented in some of the classrooms, but were not included in the study.

All schools were in Montgomery County, Maryland, a relatively affluent county immediately north and northwest of Washington, D.C. On a coding of family "breadwinner's occupation" obtained from school records, the following distribution was obtained:

unskilled or semi-skilled workers:	67	(5.2%)
skilled workers:	136	(10.5%)
clerical and sales, technicians:	171	(13.2%)
managers, proprietors, owners of small businesses, semi-professionals:	492	(38.1%)
executives, owners of large businesses, top administrators, professionals:	426	(33.0%)

The average achievement level of the children was relatively high (as it tends to be for the county as a whole). Mean national percentile scores on the Iowa Test of Basic Skills which most of the children in the sample had taken at the end of the third grade ranged from 60.36 (reference materials) to 68.19 (spelling), with the mean for the total battery composite score at 67.52. The Cognitive Abilities Test, also administered at the end of the third grade, showed national percentile means, for the children in this sample, of 65.85 for verbal, 70.94 for quantitative, and 66.03 for nonverbal ability.

Classroom Observations

The classroom observation system used in the present research was a revision of the system used in the pilot study. It includes sections for making observations of general classroom activities, classroom atmosphere, teacher activities, and student activities. It is in part a "sign" system (Medley and Mitzel, 1963) and in part a series of global rating scales. The sign system section includes some items which were adapted from a system developed by Soar, Soar and Ragosta (1971). The observer using this section of the observation system watches the class for a period of five minutes, then goes through a long list of activity categories (e.g. "teacher starts or shifts individual task or activity," "teacher gives requested help," "student-student academic discussion," "student starts or shifts activity on own," "simultaneous individual and group activities"), checking each category that occurred during the period. When the tallying for one period has been completed, another five-minute observation period is begun. Six observation periods are tallied in this way, in each observation session.

The global ratings were developed in part from our own previous research (Solomon, Bezdek and Rosenberg, 1963; Solomon, Parelius and Busse, 1969), and in part from the general literature comparing different types and styles of education. These atmosphere ratings use six-point scales and are made after the conclusion of the observation session. Among the items included are: "Ss talked very freely - Ss talked only at T direction," "Ss mostly uninvolved in class activities - Ss highly involved in class activities," "classroom is relatively devoid of stimuli - full of stimuli," "classroom is calm - excited," "teacher encouraged exploration - discouraged exploration," "teacher frequently gave individual attention - never gave individual attention." The observation form also contains a cover sheet on which the observers note characteristics of the classroom arrangement (e.g., number of adults present, desk arrangements, amount of student work displayed, accessibility of equipment and materials, etc.).

The instrument used in the pilot study contained a total of 277 items, 24 on the cover sheet, 182 in the "sign" system, and 71 global rating items. In revising this instrument for the main study, items with low reliabilities or low frequencies of occurrence (in the sign section) were eliminated. Some low-frequency items which were similar in content were combined into single items. Many retained items were rewritten, particularly rating items which had produced skewed distributions. The format of the instrument was also changed somewhat, and a few new items were added. After the final selection of items for the revised scale had been made, an observer's manual, giving item definitions and general instructions for use of the instrument, was written. This manual, and the revised observation form can be seen in Appendix B. The revised form contains 249 items, including 17 on the cover sheet, 162 in the sign section, and 70 global rating items.

The observers were trained with videotapes made of five class sessions. These tapes were viewed and scored repeatedly in daily training sessions held during a two week period. After each scoring period, the tallies and ratings of all observers were compared and discussed; sometimes a section of the tape was replayed to aid this process. By the end of the training period, good inter-observer agreement appeared generally to have been reached (this was not formally assessed, however). There were eight observers, each of whom, following this training, made one visit to each of the 50 classrooms in the study. One additional observer was trained as an alternate and made three class-observation visits (to avoid having regular observers visit classrooms which included their own children). These visits were spread out through the school year, ranging between the end of October and the end of April, with approximately three weeks between successive visits to each class. The visits were balanced between mornings and afternoons, as much as possible, and between different days of the week.

Teacher Descriptions of Classroom Activities

In order to get the teachers' own views of the characteristics, organization, and typical activities of their classrooms, they were asked, near the end of the school year, to respond to a 64-item questionnaire, "Teacher Description of Classroom Activities." An earlier version of this questionnaire containing 49 items had been used in the pilot study, and was derived in part from a questionnaire developed by Traub, Weiss, Fisher, and Musella (1972). With the revised questionnaire, shown in Appendix B, teachers made ratings on 6-point scales which described the positions of their classes with respect to a number of characteristics (e.g., the amount of free time available to students, participation of children in making rules, defining goals, deciding on classroom arrangement, selecting activities, initiating their own tasks, evaluating their own work, determining their own learning objectives; the amount of time the teacher spends presenting planned lessons, acting as "resource person," acting as discussion leader; the amount of plan changing, number of classroom rules, individuality of learning objectives, amount of structuring and sequencing of tasks). Part of the purpose of this questionnaire was to obtain information about some aspects of the classes which might not be easily accessible to observers (e.g. student participation in goal setting, planning, and evaluation).

Measures of Attitudes, Values, and Self-Assessments

In late September and early October of the 1973-74 academic year, two questionnaires ("F" and "G," Appendix B) were given to the children participating in the study; each questionnaire was administered on a different day, with about a week between administrations. A parallel pair of questionnaires ("K" and "L", Appendix B) was administered to the children in late April and early May, 1974. In order to have the questionnaires administered in the various classes at about the same period in the school year, it was necessary to employ a large number of questionnaire-administrators. A total of 14 people performed this role in the fall administration, 11 in the spring. Some of them were graduate students at local universities, some were mothers of children in the school system, and some held both of these roles. Nine of them also served as the classroom observers (and alternate). An orientation and training session was held to discuss administration procedures, to try to anticipate problems which might arise, and to ensure that administration conditions and styles would be as similar as possible between the different classrooms. A brief set of administration instructions was also prepared and given to all the questionnaire-administrators (also shown in Appendix B). A questionnaire administration schedule was set up so that all administrations in a given class would be made by the same person. Although it became necessary to make a few exceptions, this aim was met for the most part within general time periods (fall or spring), and was partially met between time periods as well (to the degree possible with some unavoidable personnel changes which occurred between the testing periods). The administrators read the questionnaire instructions and each item aloud while the children read to themselves. Although this was not necessary for most of the children, it made it possible to avoid making special administration arrangements for children with reading problems.

These two sets of questionnaires contained measures of certain values, attitudes, and self-assessments which are among the educational outcome indices in this research. They were administered at both times to give an indication of the child's initial and final status with regard to each measure. A list of these indices, with sample items, follows:

Assertion responsibility - (4 items). This is one of four "democratic attitude" subscores adapted from our previous research (Solomon, Ali, Kfir, Houlihan, and Yaeger, 1972). It refers to one's responsibility to state one's position, even if it seems unpopular or unlikely to prevail. The child was asked to indicate degree of agreement (on 4-point scales) with items including:

> "Four kids are making up some rules for a new game. Three of them agree on a rule; the fourth one doesn't like it. Since the others agree, he should not say anything about it."
>
> "Your family is planning an outing. You already know that everyone else except you wants to go to a museum. You should not say what you want to do."

Willingness to compromise - (4 items). Another of the "democratic attitude" subscores, which also asks for the child's agreement or disagreement. Items include:

> "Two friends are trying to decide what to do on a Saturday afternoon. One thinks they should go to a movie; the other thinks they should go to the park. Each should just do what he wants to by himself." (If the child disagreed, he was asked to "write in what you think they should do," and this response was scored for degree of compromise.)
>
> "When two people argue about something, one of them is right and one is wrong."

Equality of representation - (4 items). Another "democratic attitude" subscore. Among the items were:

> "When the kids in a class at school are voting on something, the kids who are always making noise should not be allowed to vote."
>
> "New members should be in a club for a while before they get to vote on things."

Equality of participation - (4 items). The last of the "democratic attitude" subscores; it includes the following items:

> "When kids are playing games, the ones who don't know how to play should get to play as much as anyone else."
>
> "Kids who get in trouble on one trip should not get to go on the next trip."

Cooperation vs. competition - (9 items; expanded from 4 in the pilot study). This measure was developed for this research. The children were asked to state agreement or disagreement on 4-point scales, with the following items, among others:

> "Classes are best when everyone tries to do better work than everyone else."
>
> "It is better for a bunch of kids to work together painting one big picture than for each kid to try to paint the best picture."

Value on group activities - (12 items). This measure was adapted from one used in prior research (Oberlander and Solomon, 1972); it asked for statements of agreement or disagreement (4-point scales). Items included the following:

> "People in group projects have a very good time working together."
>
> "You learn more by working on math problems by yourself than with a group of kids."

Value on task self-direction - (6 items). This measure was developed for this research, asked for statements of agreement or disagreement, and included these items:

> "When you want to find out more about something, you should just go to the library and see what you can dig up, without getting help."
>
> "If you want to fix a broken toy, you should ask for help right away so you won't waste a lot of time on it."

Value on decision-making autonomy - (10 items). This measure was adapted from previous research (Oberlander and Solomon, 1972), and also asked for agreement or disagreement, on 4-point scales. The items included the following:

> "Teachers should be the ones to decide what kids should work on in school."
>
> "Kids should be the ones to decide if they need to do homework."

Tolerance for differences (value on heterogeneity) - (4 items). This measure was adapted from prior research (Oberlander and Solomon, 1972), and included the following items:

> "The best kind of neighborhood to live in is one with people who are the same in their hobbies, jobs, and interests."
>
> "If a new kid came to school who talked and dressed differently from the others, it would be best for him to try to be more like everyone else."

Concern for others - (9 items). A measure developed for this research. Among the items included were:

> "A kid has enough schoolwork of his own to look after without worrying about other kids'."
>
> "It is important for you to take extra time to help kids who don't understand something."

Self-esteem - (12 items). This measure was adapted from one developed by Davidson and Greenberg (1967). Children were asked to state the frequency (on a 5-point scale ranging from always to never) with which each of a series of phrases accurately described them. The following were among the items:

"I think I am:

... a good worker in school"

... not the way I would like to be."

Self- and class-evaluations - (8 items). This was a set of items, developed for this research, asking children to evaluate the class and their own learning and enjoyment during the school year. Since it referred to what had happened during the year, it was given only in the spring, (in Booklet "L"). Included among the items were:

> "How much do you think you have learned in school this year?" (Answered with a 5-point scale ranging from "not much" to "more than ever before.")
>
> "How much fun have you had in school this year?" (Answered with a 5-point scale ranging from "not much" to "more than ever before.")

Measures of Inquiry Skill, Writing Quality, and Creativity

The questionnaires measuring attitudes, values, etc. ("F," "G," "K," and "L") also included some items intended to measure children's inquiry skill, writing skill, and creativity. Each of these items required written responses; different sets of items were developed or selected for the pre- and the post-measures.

Inquiry skill. The inquiry skill items, following the research approach of Allender (1968), posed problem situations and asked the child to state a strategy for solving the problems. The emphasis was on the child's ability to develop a potentially effective approach to reaching a solution. There was one inquiry item at the beginning of each of the four questionnaires. The items used in the first two (for the pre-test measures) were:

A Problem

> Pretend you are an engineer trying to decide on the best place to build a bridge across a river. What would you do to help you decide? Write down the things you would do to help you decide.

A Mystery

> You are hiking with some friends and come across a "ghost town." How could you find out why no one lives there any more? Write down the things you could do to find out.

The items used in the post-test questionnaires were:

A Problem

> Pretend that you are the mayor of a small city and you are trying to find a good spot to put a new playground. How would you figure out what was the best spot? Write down the things you could do to help you figure it out.

A Mystery

> You come home and find your room messed up, although it was neat when you left. You wonder whether it got messed up by the wind, a burglar, or someone just fooling around. How would you figure out which it was? Write down the things you could do to find out.

The last two of these items had also been included in the pilot study. The coding system was simplified somewhat from that used in the pilot study to eliminate some apparent between-category redundancy in the initial system. Each of the item answers was scored, in the present study, for the number of "informative responses" (number of suggested steps which would produce information useful to the solution of the problem), number of "site-extended responses" (those which involved ranging beyond the geographical site of the problem), and for the overall completeness of the response to the problem (a rating, made on a 4-point scale). To eliminate overlap between the first two of the above categories, the "site-extended" total was converted to a percentage by dividing it by the total number of appropriate responses.

Writing quality. The same items used to measure "inquiry skill" were also rated for the clarity, expressiveness, and coherence of the written communication shown in the responses to these items. Although the same coders who scored the items for inquiry also did the writing quality rating, they were instructed to make this judgment independent of the adequacy of the inquiry response; if the response was written clearly and well, it was to receive a high rating even if it constituted a poor approach to the inquiry problem. This rating was also made on a 4-point scale.

Creativity. The creativity items, taken from Wallach and Kogan (1965), were placed at the ends of the same questionnaires (Booklets "F," "G," "K," and "L"). The four items which in the original Wallach and Kogan research had shown the highest item-total correlations with the "uses" and "patterns" subtests were selected for the present investigation. Half of these were used in the pre-test questionnaires and half in the post-test questionnaires, with two items per questionnaire. The pre-test "uses" items (in Booklet "F") were "chair" and "button;" the children were asked to write down as many different uses of each as they could think of. The post-test "uses" items were "cork" and "shoe" (Booklet "K"), and were presented with the same instructions. The "patterns" items consisted of geometric line drawings, to which the children were to respond with as many different perceptions as possible ("Write down all the things you think this could be."). The pre-test patterns items (in Booklet "G") consisted of 1) a small circle above (or next to) a large half-circle, and 2) three straight, horizontal, parallel lines, two long and one (between them) short. The post-test patterns (in Booklet "L") were 1) four circles next to three sides of a rectangle, and 2) five short, parallel, staggered lines. There were no time limits for these items, which were described in the questionnaires (and by the administrators) as "games." The creativity items had been placed at the beginnings of questionnaires in the pilot study; this placement made it difficult to avoid time limits completely. In the present study, therefore, the creativity items were placed at the ends of the questionnaires, and the inquiry items at the beginnings. (The inquiry items were given effective 9-minute time limits; see "Instructions to Administrators," Appendix B).

As was the case in the pilot study, each of the creativity items was scored for "fluency" (the number of appropriate responses) and "uncommonness" (the number of responses below a specified frequency of appearance). For the items used in the pilot study ("button," "cork," and the last two patterns items described above), the frequencies were determined by making a list of all responses used by the total pilot study sample and counting the number of people giving each. After an examination of the distributions with different percentage cut-off points, it was decided, in the pilot study analysis, to define an "uncommon" response as one given by 10% of the sample or less for the uses items, and one given by 1.5% of the sample or less for the patterns items. These gave similar, and statistically workable, distributions for the different types of items. In the main study analysis, the same lists and cut-off points were used for the repeated items (if an appropriate response in the new study did not appear in the old list for the same item, it was considered to be "uncommon"). For the items which were new to the main study, it was necessary to make up new lists of items and frequencies. This was done with a random selection of seven of the classrooms, in which about 180 children had responded to these questionnaires (about 14% of the total sample). The same percentage cut-off points for the uses and patterns items were used for these new items as for those repeated from the pilot study. When the total sample was coded for these items, the designation of each response as "common" or "uncommon" was derived from the list which had been developed from the subsample; appropriate responses which did not appear in the subsample list were considered "uncommon." A similar procedure to that used for the "site-extended" inquiry category was used to remove overlap between "fluency" and "uncommonness;" the number of "uncommon" responses was converted to a percentage by dividing it by the total number of appropriate responses for the same item. These two coding categories were similar to those used by Wallach and Kogan, but not identical.

Because the above two coding categories seemed insufficient to reflect the variety and richness of some of the children's responses, two additional coding items were devised, each a rating which referred to the total set of responses to a single stimulus, and each using a 4-point scale. The first of these was "elaboration," defined in the coding instructions as "the degree to which... responses are detailed and spelled out, specifically described, embellished;" the second was "imaginativeness," defined as "the degree to which ... responses evidence the play of imagination; (uses responses) which deviate from ordinary uses of and settings for (object), and (patterns responses) which involve shifts of perspective or scale, viewing object rotated, upside-down, from above or underneath, would be among indices of this quality."

Measures of School Achievement and Socioeconomic Status

Achievement tests. After the last questionnaire (Booklet "L") had been administered, three more visits were made to each class (usually by the same administrator) to give sections of the California Achievement Test. These visits were about a week apart, and ranged between the middle and end of May (with the exception of three classes which had to be rescheduled, and had their last session during the first week of June). In order to reduce the testing time, a few of the CAT subtests were eliminated from this testing, including mathematics problems, fractions, and punctuation. The tests which were given were:

1st visit: reading (vocabulary, comprehension); 2nd visit: mathematics (computation and concepts); 3rd visit: language (capitalization, usage and structure, spelling).

To obtain indicators of prior achievement, national percentile scores of the achievement tests which most of the children in the sample had been administered by the school system a year earlier (Iowa Test of Basic Skills, and the Cognitive Abilities Test) were obtained from school records.

Socioeconomic status. Although there was space on the covers of booklets "K" and "L" for the children to write their parents' occupations, it was decided that it might be possible to obtain more accurate information from the school records. Therefore, the children were told not to fill out these blanks on the questionnaires, and the occupation information was recorded at the same time as the prior achievement test scores. The occupation of the family breadwinner was coded on a 5-point scale, on which 1 represented "unskilled or semi-skilled workers," etc. and 5 represented "executives, .. professionals, owners of large businesses," etc.

Teachers' Ratings of Students' Classroom Behavior

Near the end of the school year, the teachers were asked to make ratings of the individual children in their classes with an 11-item rating scale called "Teacher Views of Students." In the pilot study, a 30-item scale had been used, with 5-point scales, and the teachers were asked to divide their classes into relatively equal fifths with respect to each rated attribute. Because the teachers in that study felt the rating procedure to be both difficult and time-consuming, several changes were made. The number of items was reduced (with items selected to represent the qualities found to cohere into factors in the pilot study), the scale was changed to a 4-point scale, and the directions were changed. Among the attributes rated were "highly active, energetic," "self-controlled," "works well with other children," "highly involved in class activities," "cooperative, does what is asked," and "perseveres with tasks." With regard to each attribute, teachers were asked to give a rating of 1 if the attribute was "not at all or only slightly characteristic of the child (compared with others in the class)" and a rating of 4 if the attribute was "highly or extremely characteristic of the child (compared with others in the class)." The scale and instructions can be seen in Appendix B. These ratings were also considered to represent measures of outcomes in this research.

Measures of Preferences, Orientations, and Motives

Two questionnaires ("H" and "J"), containing measures of personal dispositions which were expected to interact with differences in classroom characteristics to influence various outcomes, were administered to the children in the study from early to mid-October, during the two weeks following the administration of Booklet "G." They are included in Appendix B. All of these measures had been included in the pilot study; most were revised to some degree before being used in the main study. All scales contained multiple-choice or paired-comparison type indices. Following is a list of these measures, the number of items in each, and two examples of items included in each scale:

Personal expression vs. structured role orientation - (12 items). This measures children's relative preference for situations in which they are free to express themselves and impose their own objectives versus those which are highly structured, with various role obligations clearly spelled out. It was developed for this research. Items include:

> "I would rather .. (a) be in a place where I know exactly what I am supposed to do .. (b) be in a place where I pick what I want to do."

> "I would rather .. (a) follow a time plan, so I know what I'll be doing at different times .. (b) do things as they come, with no time plan."

Fear of failure - (10 items). This measure was also developed for this research, and includes the following items:

> "I would rather .. (a) keep working on a math problem I haven't been able to solve .. (b) stop working on a math problem that is too hard, and find an easier one."

> "I would rather .. (a) work a puzzle I know I can do .. (b) work a hard puzzle I've never done before."

Intrinsic-extrinsic motivation - (12 items). This measures one's tendency to strive for the sake of the pleasure of engaging in the activity per se rather than for obtaining rewards from external sources; the measure was adapted from an instrument developed for a previous study (Oberlander and Solomon, 1972), and includes these items:

> "Peter is reading a book. Why? (a) He wants to find out more about something. (b) His teacher will give him 'extra credit'."

> "Sally is writing a story. Why? (a) She likes writing stories. (b) She wants to please her parents (or friends)."

Class characteristics preferences - (26 items). This series of items was developed for this research. It asks children to state preferences for different sets of classroom characteristics, many of which describe attributes believed typical of either "open" or "traditional" classes. Among the items are:

> "I would most like a class where .. (a) the kids choose what they want to do .. (b) the teacher and kids together plan what to do .. (c) the teacher plans what the kids will do."
>
> "I would most like a class where .. (a) kids talk to each other or the teacher whenever they want to .. (b) kids can talk only when the teacher calls on them .. (c) kids can talk to each other a little, if it's needed for what they're doing."

Locus of control (intellectual achievement responsibility) - (20 items). This measure, developed by Crandall, Katkovsky and Crandall (1965), refers to the child's acceptance of responsibility for his own successes and failures (as opposed to attributing them to external sources). It produces subscores referring to successes (I+) and failures (I-), as well as a total score. For the present investigation, the scale was shortened from 34 to 20 items by taking the 10 I+ items and the 10 I- items which had obtained the highest item-total correlations in the pilot study. The retained items include:

> "When you do well on a test at school, is it more likely to be (a) because you studied for it, or (b) because the test was especially easy?"
>
> "When you forget something you heard in class, is it (a) because the teacher didn't explain it very well, or (b) because you didn't try very hard to remember?"

Locus of instigation - (15 items; expanded from 12 in the pilot study). This measure was developed for this research and is based on some theoretical notions discussed by Solomon and Oberlander (1974). It measures the child's belief that he is generally responsible for initiating his own activities. It is differentiated from locus of control in that it refers to the instigation rather than the outcomes of behavior. Items include:

> "When I practice an instrument, it is usually because (a) I just started without thinking .. (b) I was told to, or had to .. (c) I was asked to, and agreed .. (d) I decided to."

> "When I join a club, it is usually because .. (a) I was asked to, and agreed .. (b) I was told to, or had to .. (c) I decided to .. (d) I just came across it by accident."

In scoring this scale, the "I decided to" responses were given a value of 3, "I was told to" responses a value of 1, and the other responses (referring to chance and to agreeing after being asked), a value of 2.

Achievement motivation - (20 items). The version of this measure used in the pilot study was developed by Wiener and Kukla (1970). It was slightly revised for use in the present study. Items include:

> "I prefer jobs .. (a) that I might not be able to do .. (b) which I'm sure I can do."

> "After I lose at a game .. (a) I want to play again right away .. (b) I want to do something else for a while."

Generality-specificity of strong task preferences - (12 items). This measure was adapted from prior research (Solomon, 1972). The child is asked to state his degree of liking for each of a set of 12 varied tasks, using a 6-point rating scale, ranging from "I would like doing this very much" and "I would like doing this fairly well" to "I would dislike doing this pretty much" and "I would hate doing this." Among the rated tasks were "following complicated directions to put together a model," "making a big snowman with some friends," and "practicing dart throwing to become a better shot." The measure of "generality" is derived by counting the number of strong preferences stated ("very much"). It was thought that those children with more specific and narrow preferences might have a greater chance of having these satisfied in classes with greater varieties of activities.

Social desirability - (24 items). This measure was developed by Crandall, Crandall, and Katkovsky (1965), and refers to the child's tendency to endorse statements that are socially acceptable or socially valued, even when they are not likely to be accurate. This tendency has been thought to relate to a need for approval. The measure was shortened for this study (it contains 48 items); the 24 items with highest item-total correlations in the pilot study were retained. In responding to the scale, the child is asked to state whether each of a series of statements is true or false. Among these statements are:

"When I make a mistake, I always admit I am wrong."

"I never forget to say 'please' and 'thank you.'"

Bureaucratic orientation (school environment preference schedule - SEPS) - (24 items). This measure comprised a separate instrument, which was administered during the same session as Booklet "J." It was developed by Gordon (1968), and is based on Weber's theory of bureaucracy. It measures a preference for being guided by established authorities, institutions, and rules, and a general conforming orientation. The child is asked to state his degree of agreement (on a 5-point scale) with each of a series of items, including:

"A student should always do what his teacher wants him to."

"Older people are in the best position to make important decisions for young people."

Deriving Dimensions of Classroom Environment

Instrument Reliability and Refinement

The reliability of each item in the observation form was assessed with an analysis of variance approach, with classrooms and observers treated as independent variables. "Intra-class correlations" were derived from these analyses for each observation category (Guilford, 1956; Williams, 1973). The classroom by observer interaction constituted the error variance term in the intra-class correlation computation, so that the coefficient represents the degree to which an item differentiates between classrooms, and does so in the same way for different observers ($r_{kk} = \frac{MS_{\text{classrooms}} - MS_{\text{classrooms X observers interaction}}}{MS_{\text{classrooms}}}$).

Items with reliabilities of less than .30 or mean frequencies of less than 1 per session were eliminated from further analyses, with the exception of a few which seemed of sufficient theoretical importance to include in spite of low reliability. Eight groups of items which were related but insufficiently reliable or frequent by themselves were combined: "Games (entertainment)" and "games (educational)" were combined into a single "games" category; "2 or more different simultaneous group activities" and "2 or more different simultaneous individual activities" were combined into "2 or more different simultaneous activities;" "T starts or shifts class task/activity," "T starts or shifts group task/activity," and "T ends activity" were combined into "T starts, shifts, or ends activity;" "T gives complete answer" and "T gives incomplete answer" into "T gives answer;" "T scolds," "T shouts," and "T punishes" into "T scolds, shouts or punishes;" "T uses sarcasm," "T shows annoyance," and "T shows anger" into "T shows sarcasm, annoyance or anger;" "T ranges from topic" and "T encourages ranging from topic" into "T ranges from topic or encourages same;" and "S builds on T comment" and "S builds on S's comment" into "S builds on T or S comment."

One additional set of items referring to different academic topics was also combined, not because of low reliability, but because it had been found, in the pilot study, that each topic was checked more often in "open" than in "traditional" classes simply because there were more occasions in the "open" classes when two or more activities (or topics) were being engaged in simultaneously. It did not necessarily mean that the total time per topic for any given child was different between the different types of class. Therefore an index was developed from these items to reflect the number of different topics engaged in within a single class session. From a set of ten topic-items in the "general organization" section of the observation form, the number which had been checked as occurring at least once during the session was determined; this new item was called "number of different subjects or topics during observation period." The topics included in its calculation were "language arts / English," "spelling," "hand writing," "reading practice," "math," "science," "social studies," "health / safety," "art," and "music." Three additional items from the same general set were maintained separately, "structured writing," "creative writing" and "reading." Each of these three was seen as an activity which could cut across many of the subject matter areas ("reading" referred to reading for information or pleasure, as opposed to "reading practice" whose major objective was the improvement of reading skill).

A single score was derived for each "sign" system item in a given classroom by summing the tallies within sessions (across the six periods), and then summing these totals across the eight observers. The global ratings were also summed over the eight observers who visited each classroom. After eliminations and combinations, a total of 205 items remained, 17 on the cover sheet, 119 in the sign section, and 69 global rating items. The reliabilities of the final set (including the new item combinations) are shown in Tables 1 - 7, on the following pages.

Reliability of the teacher class descriptions could not be assessed because there was only one set of judgments for each class, and no a priori scales for which to determine the degree of internal consistency.

Factor Analyses of Classroom Observations and Descriptions

One important purpose of this project was to identify dimensions of classroom environments. A series of factor analyses was used to accomplish this, using programs contained in the Statistical Package for the Social Sciences (SPSS; Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975). Because there were too many items in the observation form and the teacher description questionnaire to be handled in a single analysis even after the elimination of the least reliable items, the teacher questionnaire and each section of the observation form was analyzed separately to begin with, and the resulting factors rotated obliquely. Factor scores derived from each of these "first-order" factors were then factor-analyzed themselves. The first-order factors were rotated obliquely in order to maximize their intercorrelations for the "second-order" analysis. Factors resulting from the second-order analysis were rotated orthogonally.

The following sections present the factor loadings of the items in each analysis. The reliability of each item used in the first-order analyses (with the exception of the teacher descriptions, for which reliability could not be assessed) is also presented, in the column at the right edge of each factor analysis table.

Observation form cover sheet. Analysis of these items produced five factors, accounting for 72.7% of the total variance. Factor loadings, item reliabilities, and related information are presented in Table 1. Items are presented in order of their contributions to the successive factors, not their original order in the instrument.

The first factor is the strongest, and has the largest number of high-loading items. The first item in the factor refers to the physical openness of the space;

Table 1

Factor Analysis of Observation Form Cover Sheet Data

Items	Loadings on Factors						
	1	2	3	4	5	h^2	r_{kk}
Openness of space	-.83	-.29	.11	.55	.49	.90	.98
Number of interest centers	-.83	-.02	.36	.55	.33	.84	.89
Carpeted floor	-.82	-.27	.17	.50	.33	.77	.99
Background noise	-.80	.01	.02	.22	.30	.69	.70
% teacher-made wall displays	-.80	-.14	.00	.14	-.21	.81	.80
Accessibility of materials	-.74	.01	.55	.39	.30	.77	.79
Accessibility of equipment	-.67	-.17	.33	.37	.36	.56	.75
Signs and pictures on walls	-.64	-.15	.53	.33	.20	.62	.82
% commercial wall displays	.28	.91	-.11	-.27	-.03	.88	.83
% student-made wall displays	.44	-.74	.08	.14	.23	.90	.82
Inanimate things from environment (rocks, sand)	-.05	-.03	.80	.12	.16	.66	.83
Plants in room	-.05	-.07	.72	-.17	.00	.59	.92
Animals, etc. in room	-.29	.01	.56	.32	.54	.58	.89
Judged crowedness	.27	.10	-.02	-.83	-.18	.70	.80
Number of grade levels[a]	-.45	-.18	.18	.71	.37	.61	a
Tables/desks not in rows	-.19	-.35	-.03	.63	-.25	.61	.87
Number adults in space	-.48	-.36	.25	.43	.77	.80	.90
Number children in space	-.35	-.48	.07	.02	.76	.81	.91
Percent of variance	38.3	11.5	10.1	6.8	6.1	(72.7% tot. var.)	
Eigenvalue	6.89	2.07	1.81	1.22	1.10		

[a] This was not an observation system item; values were assigned according to general information we had regarding the classes. No reliability was assessed.

another set of items represent physical aspects of the classroom environment which are apparently associated with such openness: "number of interest centers," "carpeted floor," "teacher-made wall displays" and "signs and pictures on walls." Another pair of high-loading items refers to the accessibility of equipment and materials to the children. We have labeled this factor, "physical openness, accessibility of material and equipment to students." The high loading of one additional item, "background noise," indicates that classes characterized by such openness, etc. also have a relatively high level of noise. It will be noticed that all of these high loadings are negative. Physically open classes with accessible materials and equipment would thus show low scores on this factor.

The second factor is defined by two items, "% commercial wall displays" (with a high positive loading) and "% student-made wall displays" (with a high negative loading). The factor is called, therefore, "commercial vs. student-made wall decorations."

The third factor has the highest loadings for three similar items: "inanimate things from environment," "plants in room," and "animals, etc. in room." This factor is summarized as representing "extra-curricular stimuli."

The fourth factor seems to represent a combination of gradedness and crowdedness. Classes scoring high on this factor would tend to include two or more grade levels and to be relatively uncrowded. We called this factor, "multi-graded, uncrowded vs. single-graded, crowded."

The last factor also contains only two high-loading items, "number adults in space" and "number children in space." We call this factor, "number of children and adults in class area."

General organization and activities section of observation form. Three factors were produced by the analysis of the items in this section, accounting for 49.1% of the variance. The results of this analysis are shown in Table 2.

Table 2

Factor Analysis of Observation Form General Organization and Activities Items

Items	Loadings on Factors				
	1	2	3	h^2	r_{kk}
Simultaneous individual and group activities	-.80	-.34	-.18	.76	.55
All same group activity	.74	-.15	.02	.59	.29
Reading	-.73	.16	.11	.58	.43
Number different subjects or topics during observation period	-.70	-.34	-.21	.62	.63
Structured writing	-.65	-.08	.15	.44	.31
Textbooks in use	-.63	-.03	.04	.40	.59
Two or more different simultaneous activities	-.58	-.44	.18	.54	.44
Teacher-made materials in use	-.43	-.40	.09	.34	.34
Commercial materials in use	-.33	.05	-.11	.13	.53
Creative writing	-.29	.00	.04	.09	.51
All engaged in same individual activity	.49	.70	-.10	.71	.51
Audio-visual equipment in use	.30	-.48	-.10	.35	.45
Games	-.01	-.43	.06	.19	.27
Student-made materials in use	-.10	-.42	-.25	.24	.09
Problem solving / logic	.24	-.31	.22	.21	.30
Disruptive activity shift	.05	-.06	.80	.64	.58
Smooth activity shift	.10	.09	-.45	.22	.30
Projects / experiments	.01	-.23	-.36	.18	.35
Percent of variance	26.6	12.3	10.2	(49.1% tot. var.)	
Eigenvalue	4.80	2.22	1.83		

The first factor has a single high positive loading for "all same group activity" (plus a moderate positive loading for "all same individual activity") contrasted with high negative loadings for "simultaneous individual and group activities," "reading," "number of different subjects or topics during observation period," "two or more different simultaneous activities," and for a few other items which refer to different topics or activities. An accurate general designation of this factor would seem to be "common vs. varied simultaneous activities."

Three items with moderate negative loadings form the most consistent combination contributing to the second factor: "audio-visual equipment in use," "games," and "student-made materials in use." These are considered to be the nucleus of the factor, which is called "unusual 'fun' activities." Posed against these is a single high positive loading for "all same individual activity" suggesting that these activities tend not to occur as single class-wide activities, and that there is a degree of overlap between the first and second factors.

The third factor contains a high positive loading for "disruptive activity shift" and a moderate negative one for "smooth activity shift." The factor is therefore called "disruptive vs. smooth shifting of activities."

Teacher activities section of observation form. The factor analysis of the items recording observations of teacher activities (shown in Table 3) produced five factors, accounting for 54% of the total variance. The first factor, called "teacher hostility, annoyance, criticism," contains high loadings for such items as "shows annoyance, anger," "orders," "scolds, shouts or punishes," "criticizes behavior," "uses sharp tone," "warns," and "uses sarcasm." The pattern seems clear and unambiguous.

The second factor includes several items which refer to teachers' interactions with students. Most of these describe ways in which teachers promote student verbal participation: "asks for clarification," "asks convergent question," "calls on

Table 3

Factor Analysis of Observation Form Teacher Activities Items

Items	Loadings on Factors					h^2	r_{kk}
	1	2	3	4	5		
Shows annoyance, anger	.90	.03	-.03	-.14	-.41	.87	.56
Orders, commands	.86	.02	.03	-.17	-.32	.77	.54
Scolds, shouts, or punishes	.85	-.12	.04	-.03	-.01	.77	.61
Criticizes behavior	.82	.00	-.06	.06	-.33	.72	.67
Uses sharp tone	.80	-.08	.01	-.04	-.06	.66	.54
Uses firm tone	.80	-.02	-.07	.00	-.32	.68	.46
Warns	.77	.05	.12	-.19	-.41	.69	.49
Criticizes student work or comments	.75	.32	.15	-.03	-.27	.70	.61
Uses sarcasm	.64	.11	-.08	-.09	.00	.45	.56
Ignores, rejects S idea (no explanation)	.55	-.09	-.20	-.12	-.22	.36	.25
Invokes/announces classroom/discipline rule	.50	-.16	-.08	.25	-.24	.40	.27
Talking to one student, no interaction	.38	.13	.19	-.20	.10	.26	.18
Asks for clarification	.09	.79	.00	.08	.15	.66	.26
Amplifies or explains student comment	-.01	.77	-.07	.32	.03	.68	.24
Asks convergent (1 answer) question	.03	.71	.21	-.24	-.23	.68	.36
Gives answer, complete or incomplete	.14	.71	.26	.15	-.13	.60	.20
Calls on student (after no offer)	.22	.71	.03	-.11	-.08	.57	.36
Elicits implications or consequences	-.22	.66	.05	.19	.43	.63	.27
Calls on student (after offer)	-.06	.64	-.50	.15	-.07	.75	.53
Gives factual material	-.14	.63	.07	.19	-.26	.55	.45
Encourages student expression	-.22	.59	.10	.41	.54	.71	.20
Listens attentively to student	-.16	.56	.46	.33	.38	.66	.48
Verbally prods	.33	.53	.20	.00	.27	.51	.30
Asks individual a question	.28	.52	.52	-.23	.09	.56	.22
Disagrees with S idea (with explanation)	.38	.47	.19	.00	.06	.39	.38

Table 3 (continued)

Items	Loadings on Factors						
	1	2	3	4	5	h^2	r_{kk}
Gives requested help	.02	-.13	.73	-.09	.02	.58	.43
Talks about students' work (one or more)	-.05	.13	.73	.22	.02	.60	.30
Asks class a question	.05	.26	-.73	.38	-.04	.76	.55
Interacts with one student	.00	.03	.67	.18	.28	.55	.36
Interacts with subgroup	-.31	.32	.61	-.07	.05	.55	.44
Interacts with total class	-.02	.36	-.59	.51	.05	.73	.54
Gives unrequested help	.19	.28	.57	-.16	-.17	.46	.33
Touches/hugs student	.00	-.09	.54	.33	-.12	.48	.48
Asks group a question	-.17	.47	.54	-.21	.09	.56	.34
Talks to total class (no interaction)	.36	-.25	-.49	.36	-.05	.56	.58
Works alone at desk or table	.03	-.24	-.41	-.14	-.04	.23	.60
Distracts S(s) from disruptive activity	.25	.14	.32	.11	.01	.20	.37
Tells personal opinion, experiences, likes	.02	.36	-.01	.70	.29	.62	.62
Smiles	-.49	.24	.29	.60	.35	.71	.73
Praises student work or comments	-.32	.42	.31	.60	.03	.67	.37
Socializes with students	-.41	-.12	.18	.53	.21	.50	.28
Ranges from topic or encourages same	-.31	.45	-.15	.53	.16	.56	.26
Plans with students	-.12	-.06	.07	.51	.49	.47	.24
Participates in student activity	-.19	-.01	-.21	.50	.11	.31	.38
Tells implications or consequences	.31	.34	-.07	.48	-.14	.47	.46
Gives speculative, hypothetical material	-.22	.31	-.14	.40	.31	.36	.32
Praises/approves behavior	-.06	.15	.09	.37	.15	.17	.26
Talks with adult	.07	-.15	.02	.33	.04	.15	.32

Table 3 (continued)

Items	Loadings on Factors						
	1	2	3	4	5	h^2	r_{kk}
Suggests, guides	-.23	.18	.25	.22	.76	.67	.32
Asks divergent question (many answers)	-.07	.26	-.20	.28	.73	.69	.28
Drills students (rote, repetitive work)	.07	.35	.14	-.14	-.61	.55	.61
Encourages elaboration of idea or activity	-.24	.43	.19	.41	.60	.65	.29
Talks to subgroup (no interaction)	.13	.10	.38	-.10	-.52	.44	.37
Gives directions	.27	-.08	.01	.21	-.44	.32	.23
Starts, shifts, or ends activity	.21	.09	-.16	-.07	-.36	.19	.21
Reads aloud	.14	.06	-.05	.02	-.26	.08	.37
Percent of variance	17.7	14.1	10.4	6.9	4.9	(54% tot. var.)	
Eigenvalue	9.91	7.88	5.84	3.86	2.72		

student," "encourages student expression," "listens attentively," "verbally prods," "asks individual a question," "disagrees with S idea (with explanation)," and "amplifies student comment." The factor is called "encouragement of active (verbal) student participation."

The third teacher activities factor poses high positive loadings for several items which refer to teacher involvement with individuals or small groups within the class ("gives requested help," "talks about students' work--one or more," "interacts with one student," "interacts with subgroup," "gives unrequested help," "touches/hugs student," "asks group a question") against high or moderate negative loadings for items which refer to teacher interaction with the class as a whole ("asks class a question," "interacts with total class," and "talks to total class"). The factor was labeled "teacher interaction with individuals or subgroups vs.

total class."

The fourth factor contains elements of teacher warmth (with high or moderate loadings for "smiles," "praises student work or comments," "socializes with students," and "praises/approves behavior") and teacher expressiveness ("tells personal opinion, experiences, likes," "ranges from topic or encourages same," "tells implications or consequences," "gives speculative, hypothetical material"). Moderate loadings for "plans with students" and "participates in student activity," in conjuction with these other high loading items, convey an impression of friendly and nondominating interaction with students The factor is called "personal expression, warmth, friendliness."

The fifth factor was called "encouragement of student expressiveness, exploration vs. drilling," primarily because of high positive loadings for "asks divergent question" and "encourages elaboration of idea or activity," a moderate one for "encourages student expression," and a high negative loading for "drills students (rote, repetitive work)." There is also a high positive loading for "suggests, guides," indicating that teachers who encourage student expressiveness etc., do so in a rather indirect way.

Student activities section of observation form. Items from this part of the form also produced five factors, which accounted for 63.6% of the total variance. This factor analysis is shown in Table 4.

Items defining the first factor refer to students smiling, cooperating with, helping, and responding to one another, raising (and answering) questions, speculating and experimenting. The factor is called "inter-student cooperation, friendly interaction while working," a title which seems to represent the most salient cluster of characteristics represented.

The second factor is called "general student disruptiveness, hostility" due to the set of consistent high loadings for such items as "student ignores or rejects

Table 4

Factor Analysis of Observation Form Student Activities Items

Items	Loadings on Factors					h^2	r_{kk}
	1	2	3	4	5		
Five or more students smile	.76	-.09	-.20	.09	-.33	.63	.67
Student answers student question	.69	-.18	-.13	.57	-.31	.70	.44
Student builds on teacher or student comment	.69	-.13	.06	-.04	-.03	.52	.06
Students work together	.66	-.16	-.12	.58	-.65	.83	.62
Students share, cooperate	.65	-.02	-.23	.41	-.49	.62	.35
Student raises question or makes comment	.65	-.21	.17	.11	-.08	.48	.29
Student gives opinions, experiences, likes	.64	-.16	.04	-.06	-.29	.49	.48
Student helps (teaches) student	.63	.09	-.11	.42	-.46	.59	.38
Student gives feedback, evaluation	.61	-.05	.05	.23	-.34	.43	.15
Inter-student academic discussion	.60	-.14	-.11	.56	-.27	.59	.45
Student teases student(s) (friendly)	.53	-.43	-.32	.09	-.40	.58	.45
Student experiments with material, equipment	.50	.13	-.46	.23	-.14	.50	.31
Student gives speculative, hypothetical material	.41	.16	.23	.07	.29	.41	.23
Student ignores or rejects T request, demand	.10	-.86	.06	.11	.00	.75	.71
Student teases student(s) (unfriendly)	-.03	-.78	-.03	.27	-.07	.66	.60
Students horseplay	.40	-.77	-.33	.11	-.42	.88	.78
Students shout	.34	-.76	-.28	.04	-.16	.74	.72
Five or more students fidget	-.03	-.75	.16	-.27	.16	.70	.61
Students argue	.36	-.74	-.19	.32	-.18	.69	.64
Student expresses annoyance	.23	-.68	-.19	.49	-.07	.68	.45
Student(s) talk about non-class topic	.16	-.67	-.13	.40	-.46	.70	.74
Two or more Ss not attending to T (when expected)	.00	-.67	.41	-.06	.44	.76	.58
Three or more Ss move around aimlessly	.33	-.64	-.14	.40	-.59	.80	.71
Student criticizes (disapproves) student	.34	-.63	-.06	.43	.02	.62	.48

Table 4 (continued)

Items	Loadings on Factors						
	1	2	3	4	5	h^2	r_{kk}
Student frowns, cries	-.07	-.60	.14	.14	-.07	.41	.27
S tries to stop other's disruptive behavior	.52	-.57	-.09	.09	-.37	.62	.44
Two or more Ss apparently daydreaming	-.24	-.55	.38	-.05	.23	.53	.50
Student waits	-.32	-.46	.09	.11	.35	.46	.22
Five or more Ss attending to teacher	-.01	-.09	.85	-.18	.40	.80	.39
S gives solicited question or comment	.09	-.15	.82	-.19	.06	.74	.22
S offers response (raises hand)	-.16	.17	.78	-.34	.56	.84	.61
Student answers teacher question	-.09	.03	.68	.35	.00	.67	.39
Student gives factual material	.13	.19	.57	.16	-.15	.48	.09
Student listens, watches	.08	-.17	.55	-.43	.36	.55	.44
Student - teacher discussion of work	.08	-.15	.03	.73	-.29	.57	.31
Student seeks attention of teacher	.22	-.20	.24	.70	.02	.64	.32
Student seeks feedback, evaluation	.15	-.26	-.18	.70	-.19	.53	.30
Student asks for directions or help	.02	-.18	-.48	.70	-.30	.69	.29
Five or more Ss move purposefully	.28	-.01	-.31	.66	-.58	.66	.56
Student starts or shifts activity on own	.35	.01	-.09	.44	-.86	.83	.54
One-half class or more working intently, with teacher attention	-.20	-.05	.30	-.04	.73	.58	.37
S gets or replaces materials, equipment on own	.30	-.15	-.33	.63	-.70	.75	.48
One-half class or more working intently, without teacher attention	.13	.35	-.38	.39	-.67	.71	.49
Students form own work group	.43	-.26	.05	.56	-.65	.72	.47
Student(s) work on floor	.30	-.17	.18	.16	-.59	.48	.81
Percent of variance	27.2	15.3	9.3	7.2	4.7	(63.6% tot.)	
Eigenvalue	12.22	6.88	4.19	3.22	2.11		

teacher request or demand," "student teases student--unfriendly," "students horseplay," "students shout," "students fidget," "students argue," "student expresses annoyance," and "student frowns, cries."

Two qualities are evident in the items with high loadings on the third student activities factor; active student participation in academic classroom activities, and teacher direction of this participation. The items manifesting one or both of these qualities include "five or more students attending to teacher," "student gives solicited question or comment," "student offers response," "student answers teacher question," "student gives factual material," and "student listens, watches." The title assigned to the factor is "attentive, responsive class participation (academic) under teacher direction."

Three similar items with high positive loadings form the nucleus of the fourth factor. Each of them indicates a request for help or attention from the teacher ("student seeks attention of teacher," "student seeks feedback, evaluation," and "student asks for directions or help"). Another item, "student - teacher discussion of work" also refers to student - teacher interaction, possibly the activity resulting from the student's request. A final high loading item refers to students moving "purposefully;" this item seems less closely tied in with the others (but could in many cases reflect movement toward the teacher to get the desired help or attention). The factor is accordingly labeled "student-initiated interaction with teacher."

The last student activities factor contains a set of negative-high-loading items which refer to various self-initiated (or self-sustained) activities ("student starts or shifts activity on own," "student gets or replaces materials, equipment on own," "½ class or more working intently, without teacher attention," and "students form own work group") contrasted with a high positive loading for an item reflecting a non-self-sustained activity ("½ class or more working intently, with teacher attention"). The factor is called "student independent, autonomous activity" (another negatively scored factor, it will be noted.)

Student ratings section of observation form. Results of the factor analysis of the global ratings of student classroom behavior are shown in Table 5. This analysis produced three factors, accounting for 81.9% of the total variance. The ratings were each made with six-point scales, with the two extremes labeled. The item names, at the left of the table, present both poles, with the one given the score of six presented first in each case. Thus, an item with a positive loading can also be considered to have a negative loading when considered from the perspective of the second-mentioned pole.

The first factor is by far the strongest of the three in this analysis. Its high-loading items contrast classes in which the students followed prescribed plans, had no alternatives, worked at a common pace, moved little, were compliant and teacher-dependent, had no voice in planning, and participated in common activities, with those in which they followed their own interests, made choices, worked at their own pace, moved much, were independent and self-sustaining, were responsible for planning class activities, and participated in varied simultaneous activities. This factor is called "students controlled, structured, common-paced vs. independent, autonomous, varied."

The second factor, called "eager involvement, interest vs. uninvolvement, boredom," shows high loadings for items representing extreme interest, involvement, happiness, and initiative at one set of poles, and boredom, uninvolvement, unhappiness, and lack of initiative at the other.

The third factor contains two items with very high loadings, one negative--"worked on convergent tasks most of the time (vs. never)" and one positive--"worked on divergent tasks most of the time (vs. never)." Convergent tasks have one or a limited set of definite correct answers or outcomes (e.g., mathematical problems, puzzles); divergent tasks are "open-ended" and can have a large or unlimited number of appropriate outcomes (art, creative writing, hypothetical speculations). This

Table 5

Factor Analysis of Observation Form Student Ratings

Items	Loadings on Factors				
	1	2	3	h^2	r_{kk}
Followed prescribed plan vs. followed own interests	.93	-.37	-.42	.88	.71
Constantly making choices vs. had no alternatives	-.92	.48	.35	.88	.74
Common pace aimed at vs. worked at own pace	.90	-.27	-.20	.83	.64
Moved very little vs. moved very much	.89	-.17	-.39	.82	.78
Students were independent vs. were compliant	-.89	.19	.51	.85	.70
Work teacher-dependent vs. self-sustaining	.88	-.48	-.55	.87	.59
Ss totally responsible for class activity planning vs. had no voice in planning	-.87	.46	.43	.81	.74
Varied simultaneous activities vs. single common activities	-.79	.31	-.05	.74	.62
Talked only at T direction vs. talked freely	.76	-.07	-.48	.68	.86
Ss were passive (receiving) vs. active (productive)	.63	-.62	-.30	.59	.58
Ss seemed extremely interested vs. seemed bored	-.20	.96	.25	.95	.63
Highly involved vs. uninvolved in class activities	-.24	.95	.20	.90	.64
Ss appeared happy vs. unhappy	-.42	.89	.26	.82	.66
Ss showed no initiative vs. much initiative	.60	-.74	-.32	.70	.63
Worked on convergent tasks most of time (vs. never)	.41	-.32	-.96	.93	.44
Worked on divergent tasks most of time (vs. never)	-.46	.37	.91	.87	.48
Percent of variance	56.8	16.3	8.8	(81.9% tot. var.)	
Eigenvalue	9.09	2.61	1.42		

factor is called "divergent tasks vs. convergent tasks."

Classroom ratings section of observation form. The factor analysis of the global ratings of the general classroom atmosphere are presented in Table 6. Three factors were retained and rotated, accounting for 79% of the total variance.

The first factor was labeled "relaxed, friendly, accepting vs. tense, hostile, rejecting." This dimension contrasts classes which were rated, at one extreme, as friendly, accepting, relaxed, person-oriented, cooperative, and creative with those rated, at the other, as hostile, rejecting, tense, not person-oriented, not cooperative, and uncreative.

The positive extreme of the second factor is defined by item poles defined as "business-like," "quiet," "orderly," "not at all spontaneous," "calm," "rigid regarding procedures," "task-oriented," "tidy," "not at all carefree," with "many rules," and an "orderly sequence of activities." The factor is named "calm, orderly task orientation vs. excited, unruly spontaneity."

The third factor is defined primarily by three items with very high loadings: "extremely varied vs. repetitive," "diverse vs. common materials and books in use at same time," and "full vs. relatively devoid of stimuli." The factor is called "diversity, variety of stimuli vs. repetitiveness, commonality, sparseness."

Teacher ratings section of observation form. Results of the factor analysis of the observers' ratings of the teachers' classroom behavior are presented in Table 7. Five factors resulted from this analysis, accounting for 78.9 percent of the variance.

Items defining the positive pole of the first factor represent teachers who were critical, impatient, punitive, insensitive, unprotective, sometimes sarcastic, cold, and somewhat uncomfortable-appearing. These are contrasted with, at the other pole, praising, patient, nonpunitive, sensitive, protective, nonsarcastic, very warm and comfortable teachers. The dimension represented seems quite clear, and is called "coldness, criticism vs. warmth, praise."

Table 6

Factor Analysis of Observation Form Class Ratings

Items	Loadings on Factors			h^2	r_{kk}
	1	2	3		
Hostile vs. friendly	-.93	.03	-.40	.88	.61
Rejecting vs. accepting	-.91	.04	-.43	.86	.66
Relaxed vs. tense	.90	-.41	.54	.87	.72
Extremely vs. minimally person-oriented	.89	-.25	.53	.80	.62
Frequently vs. never cooperative	.83	-.07	.54	.72	.56
Uncreative vs. creative	-.79	.21	-.74	.76	.64
Not oriented vs. oriented to novel, unusual	-.73	.40	-.70	.71	.64
Leisurely vs. rushed	.63	-.42	.62	.57	.66
Extremely vs. not at all business-like	-.17	.94	-.28	.89	.76
Extremely noisy vs. quiet	.03	-.93	.14	.89	.85
Unruly vs. orderly	-.13	-.91	.00	.93	.83
Behavior extremely vs. not at all spontaneous	.44	-.88	.35	.85	.79
Excited vs. calm	-.01	-.81	.08	.69	.57
Flexible vs. rigid regarding procedures	.63	-.79	.63	.91	.74
Extremely vs. minimally task-oriented	-.37	.79	-.46	.70	.60
Many vs. no rules in evidence	-.64	.79	-.55	.89	.75
Orderly vs. random sequence of activities	-.25	.78	-.53	.72	.75
Very tidy vs. untidy	-.09	.78	-.21	.61	.83
Extremely vs. not at all carefree, jovial	.65	-.77	.50	.86	.75
Extremely varied vs. repetitive	.64	-.27	.90	.84	.65
Diverse vs. common materials and books in use at same time	.31	-.24	.86	.76	.55
Full vs. relatively devoid of stimuli	.52	-.18	.80	.65	.75
Percent of variance	50.3	22.8	5.9	(79.0% tot. var.)	
Eigenvalue	11.07	5.02	1.30		

Table 7

Factor Analysis of Observation Form Teacher Ratings

Items	Loadings on Factors					h^2	r_{kk}
	1	2	3	4	5		
Mostly praising vs. mostly critical	-.90	-.37	-.29	-.24	.52	.89	.76
Very patient vs. impatient	-.87	-.12	-.59	-.12	.45	.91	.70
Punitive vs. not at all punitive	.86	.19	.45	.09	-.62	.87	.72
Insensitive vs. sensitive to students	.85	.53	.38	.16	-.44	.88	.68
Not protective vs. protective, sheltering	.82	.28	-.02	.09	-.26	.74	.49
Never vs. frequently used ridicule, sarcasm	-.80	.10	-.37	-.19	.37	.78	.74
Very warm vs. not at all warm	-.77	-.64	-.39	-.07	.43	.89	.67
Extremely comfortable, confident vs. uncomfortable	-.52	-.51	-.25	.32	.48	.68	.39
More attention to girls vs. to boys	-.41	-.26	.03	-.37	.41	.42	.58
Flamboyant, dramatic vs. dry	-.13	-.94	-.09	-.10	.20	.90	.73
Unenergetic vs. very energetic	.25	.93	-.05	.16	-.20	.89	.73
Monotone vs. varied, expressive voice	.14	.92	-.11	.11	-.06	.88	.68
Gestured constantly vs. very little	-.11	-.92	-.12	.03	.21	.88	.69
Highly enthusiastic vs. unenthusiastic	-.45	-.90	-.10	-.09	.28	.89	.72
Never vs. often used humor	.37	.79	.27	-.11	-.27	.74	.71
Often vs. seldom laughed	-.55	-.78	-.24	.06	.43	.82	.68
Vague, unclear, incoherent vs. extremely clear, coherent	.39	.61	-.34	.01	-.27	.67	.33
Seldom vs. often gave direct and immediate feedback	.19	.60	.04	.58	.16	.77	.25
Spoke very slowly vs. very rapidly	-.38	.57	-.04	.23	.06	.64	.74
Highly vs. not at all permissive	-.30	-.12	-.93	-.24	.33	.89	.79
Accepted narrow vs. broad range of behavior	.30	.11	.92	.28	-.33	.89	.80
Always vs. seldom exercised direct control	.46	-.08	.76	.19	-.70	.86	.72
Discouraged vs. promoted S independence, autonomy	.46	.25	.73	.27	-.65	.78	.64

Table 7 (continued)

Items	Loadings on Factors						
	1	2	3	4	5	h^2	r_{kk}
Neither sought nor accepted procedural suggestions (vs. did both)	.35	.31	.71	-.09	-.55	.71	.64
Encouraged vs. discouraged open student expressiveness	-.60	-.37	-.62	-.05	.45	.68	.48
Never lectured vs. mostly lectured	-.13	.14	-.53	-.38	.52	.57	.54
Never vs. frequently gave individual attention	.16	.09	.23	.91	-.16	.85	.56
Never vs. frequently consulted with individuals or small groups	.19	.01	.30	.88	-.32	.86	.43
Emphasized comprehension, analysis vs. memory, rote	-.30	-.38	-.22	-.11	.84	.77	.39
Discouraged vs. encouraged exploration	.66	.36	.56	.24	-.73	.83	.56
Often vs. seldom controlled indirectly	-.49	.05	-.45	-.15	.69	.62	.25
Percent of Variance	40.5	19.0	8.6	7.0	3.8	(78.9% tot.)	
Eigenvalue	12.66	5.90	2.67	2.16	1.17		

The second factor seems to represent teacher dynamism and activation. Its high-loading items contrast, at the negative poles, flamboyance, dramatics, energy, vocal expressiveness, gesturing, enthusiasm, humor and laughter, clarity and rapidity of speech, and immediacy of feedback with, at the positive poles, dryness, lack of energy, vocal monotonousness, paucity of gesturing, lack of enthusiasm, little humor or laughter, incoherence and slowness of speech, and little or non-immediate feedback. The factor is called "lethargy, dryness vs. energy, flamboyance."

The degree of control manifested by the teacher appears to be the major element represented by the third factor. The positive pole is defined by nonpermissiveness, a narrowly-defined range of acceptable behavior, direct control, discouragement of student autonomy, and nonacceptance of student procedural suggestions or expressiveness; the negative pole by permissiveness, a broad range of acceptable behavior, little direct control, promotion of student autonomy, and acceptance of student procedural suggestions and expressiveness. The title for this factor is "teacher control, dominance vs. permissiveness, encouragement of student autonomy."

The fourth factor is defined primarily by two high-loading items: "never vs. frequently gave individual attention," and "never vs. frequently consulted with individuals or small groups." The factor is called "individual attention, consultative role" (with the named pole of the factor corresponding to the negative item loadings.) A third item, "..direct and immediate feedback," also has a moderate loading and seems consistent with individual attention and consultation.

Three items form the nucleus of the fifth teacher-rating factor: "emphasized comprehension, analysis vs. memory, rote," "discouraged vs. encouraged exploration" (a negative loading), and "often vs. seldom controlled indirectly." The first two were given greater weight in defining the factor as "emphasis on student comprehension, exploration vs. memory, rote" (although indirect control does not seem inconsistent with this characteristic.)

Teacher questionnaire. The factor analysis of the items in the teacher questionnaire describing classroom organization and activities is presented in Table 8. These factors are somewhat less clear and more difficult to interpret than those produced by the different sections of the observation protocol. While the eigenvalues and percent of variance accounted for by the four factors shown in this table (36.7%) may seem to suggest that a larger number of factors would have been appropriate, rotations of several different numbers of factors were examined in this analysis, as in most of the other factor analyses in this study, and the result presented here

Table 8

Factor Analysis of Teacher Questionnaire

Items	Loadings on Factors				h^2
	1	2	3	4	
Ss participate in vs. T alone plans all evaluation procedures	-.75	.28	.06	-.03	.60
No joint planning sessions (T & Ss) vs. several sessions a week	.69	-.21	-.01	.09	.49
Ss participate in vs. T alone evaluates S work	-.68	.06	.22	-.01	.52
T places Ss vs. Ss place themselves in subgroups	.67	-.07	.39	.19	.63
T vs. Ss plan sequence of activities	.63	.06	.13	.31	.50
Ss vs. T provides main directing force in class	-.61	.15	.07	-.25	.39
Ss vs. T decides what tasks need work at any given time	-.60	.36	-.04	-.39	.50
Ss vs. T determine most classroom procedures	-.58	.25	.43	-.22	.54
T almost never vs. most of time acts as discussion leader on S-initiated topics	.56	.04	.26	.00	.42
T almost never vs. most of time acts as "resource person"	.56	-.18	.05	.36	.39
T vs. Ss determine Ss' activities	.55	-.32	.32	.18	.48
T attention directed to subgroups almost never vs. most of time	.54	-.05	-.01	-.17	.36
At least one hour per day vs. almost no independent study time available	-.52	.20	.09	.02	.30
Classroom rules made by Ss vs. by T.	-.51	.23	.36	-.13	.39
Ss usually all engaged in same activity vs. engaged in many different activities simultaneously	.51	-.46	-.28	.36	.53
Ss evaluate each others' work frequently vs. not at all	-.47	.17	.22	-.02	.28
Most Ss work at own pace vs. common pace aimed at	-.47	.29	-.15	-.14	.30
Ss spend little vs. much time talking about personal experiences, beliefs and opinions	.42	-.27	-.13	.27	.26
Little vs. almost all time free for Ss to pursue own interests	.35	.10	-.13	.22	.20

Table 8 (continued)

Items	Loadings on Factors				h^2
	1	2	3	4	
Nothing prescheduled vs. all activities occur according to prearranged time schedule	-.31	.30	.25	-.10	.22
Ss "flow" back and forth at will between different sections of open class area	-.24	.12	-.01	-.15	.07
T almost never vs. most of time gives prepared oral presentations	-.30	.72	-.05	-.12	.55
Evaluation procedures different for each vs. same for all Ss	-.13	.69	-.11	-.08	.49
Subgroups change very often vs. seldom	-.24	.65	-.03	-.10	.44
T attention directed to class as whole almost never vs. most of time	-.18	.62	.26	-.25	.48
Learning objectives set separately for each child vs. same for all	-.23	.60	-.04	.06	.41
Ss expected to resolve own conflicts or arguments vs. conflicts, etc. stopped quickly by T	-.40	.56	-.24	-.22	.49
Ss do most of work in small groups vs. as individuals or total class	-.09	.55	.00	.03	.32
T almost never acts as discussion leader on topics of own choice vs. does so most of time	-.16	.54	-.08	-.28	.35
Ss do not vs. frequently help one another	.47	-.50	-.05	.17	.40
Ss work at many "centers" vs. at own desk or table	-.27	.49	.13	-.27	.33
Plans changed very frequently vs. seldom	-.16	.49	-.14	.02	.28
Ss free to experiment and manipulate materials vs. expected to use as instructed	.11	.48	-.03	-.07	.27
Discussions kept closely topic-relevant vs. allowed to wander	-.25	-.43	.10	.34	.41
Ss spend little vs. most of time trying to discover and apply basic principles	.24	-.40	.08	-.17	.27
Few vs. many rules for acceptable behavior	-.36	.39	-.10	-.23	.27
Ss vs. T decide on arrangement of furniture and equipment	-.19	.38	.14	-.36	.26
Ss expected to participate in all vs. may choose not to participate in any class activity	.08	-.33	.00	.13	.12

Table 8 (continued)

Items	Loadings on Factors				h^2
	1	2	3	4	
Little vs. very strong emphasis on having pleasant, happy time in class	.01	-.27	-.18	-.21	.17
Ss expected to solve most problems themselves vs. get immediate help	-.16	-.22	-.03	.02	.09
Average number of hours per day with children in own class (or "homeroom" or "core")	-.16	.04	.70	.10	.53
Typical number of room changes per day for Ss	-.14	.13	-.64	.02	.46
Number teachers instructing Ss during typical day	-.19	.25	-.64	-.14	.51
Number of "departmentalized" subjects	.28	.24	-.60	.05	.51
Class is never vs. daily informed which Ss did best work	.03	-.04	-.49	-.40	.42
T attention directed to individual Ss almost never vs. most of time	.44	-.01	.44	.13	.41
Most vs. none of the class work involves memorizing	-.13	-.28	.43	.03	.30
Most instructional materials commercial or developed by T vs. developed by Ss	.36	.08	-.37	.27	.33
Ss leave classroom freely without permission vs. with permission	-.06	.18	.28	-.65	.52
Ss grouped according to ability or achievement level for all vs. for no subjects	.01	.18	-.08	.63	.47
T (or school guidelines) determine what Ss should learn vs. Ss decide what they want to learn	.05	.01	.13	.57	.34
T describes or demonstrates methods of learning and problem solving vs. Ss develop and use own methods	.26	.18	.26	.56	.50
Little vs. much effort to keep Ss within sight of T	-.05	.01	.00	-.55	.31
Ss start themselves vs. T starts Ss on tasks	-.26	.18	-.03	-.51	.30
Ss may talk only when called on vs. at any time	.17	-.33	-.35	.50	.45
Ss leave seats with permission vs. at will	.13	-.38	-.38	.50	.49
Frequent vs. no testing	-.05	-.19	.24	.49	.33

Table 8 (continued)

Items	Loadings on Factors				h^2
	1	2	3	4	
Little vs. much overt emphasis on getting work done and done well	-.20	.11	-.09	-.48	.25
Much vs. no homework	.27	-.20	.31	.47	.37
Most learning tasks "open-ended" vs. clearly organized and sequenced	-.38	.11	-.11	-.46	.32
Arrangement of furniture and equipment changed rarely vs. frequently	.01	-.29	-.17	.39	.25
Parents or volunteers participate little vs. much in classroom activities	.27	.05	.00	.38	.21
Classroom rules enforced by Ss vs. by T	-.28	.29	.26	-.35	.28
Help initiated by T perception of need vs. S request	.04	-.07	-.04	.33	.11
Ss get material or equipment only with permission vs. at any time	.03	-.22	.04	.27	.11
Percent of variance	16.6	7.1	6.5	6.5	(36.7%)
Eigenvalue	10.80	4.59	4.25	4.20	

is the rotation which produced the most meaningful and most interpretable factors. One item included in this analysis ("Ss 'flow' back and forth .. between different sections of open class area") was not included in the original questionnaire; the information was added before data analyses as a result of comments made by some teachers when responding to the questionnaire. In cases where the teachers had not made such comments, information for this item was reconstructed by one or more of the observers who had visited the class.

The items which load most highly on the first factor generally refer to the degree to which the teacher alone controls, directs, and makes decisions about student and class activities, and the degree to which the students participate in such functions. Teachers at the positive pole of this factor take sole charge of planning evaluation procedures, evaluating students' work, forming subgroups, planning the sequence of activities, deciding on needed tasks and activities, making rules, etc., while, in classes at the negative pole, the students either participate in or by themselves perform these activities. The factor was accordingly named "teacher control, decision-making vs. student autonomy, participation in decisions and class direction."

Two basic elements appear to be encompassed by the second factor from the teacher questionnaire. Most of the items with highest loadings refer to the teacher's interaction with individuals or subgroups, and attending to the varied needs of the different students, as opposed to interaction with the total class, and treating the class in a relatively undifferentiated way. These items refer to the individualization of evaluation procedures and learning objectives, and to the predominant setting or focus of student activity and teacher attention--total class vs. individual or small group. Another set of consistent items, with somewhat lower factor loadings, refers to the degree to which class plans and activities are subject to change. This is indicated directly in one item with a moderate loading ("plans changed very frequently vs. seldom"), but is also evident in related items which refer to freedom to experiment and manipulate materials and to carry discussions into unexpected directions. The factor was named "individualization, flexibility vs. nondifferentiation, rigidity."

The third factor is defined primarily by four highly loaded items: "average no. of hours per day with children in own class," "typical no. of room changes per day for Ss," "number of teachers instructing students during typical day," and "number of 'departmentalized' subjects." The first of these has a positive loading, the rest, negative. The fourth item, referring to "departmentalization" seems to be central to this factor. Since children in departmentalized situations spend less time with "homeroom" or "core" teachers, change rooms more often, and are taught by more teachers than those in "self-contained" situations, the first three items would seem to be logical concomitants of the fourth. The factor was therefore called "self-containedness vs. departmentalization."

The most consistent set of items with high or moderate loadings on the fourth factor seem to reflect a dimension of "restrictiveness vs. freedom" (which is the name assigned to the factor). These items refer to freedom to leave the classroom, be out of the teacher's sight, talk, leave seats, and get equipment and material. A few other items (e.g. "..Ss develop and use own methods," "much vs. no homework") are not inconsistent with this designation of the total factor.

Second-order analysis of classroom factors. A total of 33 factors were produced by the eight factor analyses of classroom activities just described. Factor scores were derived for each of these factors; these factor scores represent the position of each classroom on each factor. The scores then served as the input for a second-order factor analysis of classroom dimensions. This procedure can be considered analogous to factoring empirically-derived scales, as is frequently done in personality research. This factor analysis produced six factors, shown in Table 9, accounting for 68.7% of the variance.

The first of these factors shows particularly high loadings for four of the first-order factors: "relaxed, friendly vs. tense, rejecting," "involvement, interest vs. boredom," "teacher hostility, annoyance, criticism," and "coldness, criticism vs. warmth, praise" (the last two with negative loadings) The factor was named "warmth, friendliness, involvement, interest, vs. coldness, hostility, boredom." Two of these high-loading first-order factors refer to teacher behavior, one refers to child behavior, and one to general classroom atmosphere. The new factor should thus be considered to reflect all these elements. Some of the moderate loadings suggest that "friendly" classes tend also to include many stimuli and unusual and varied activities, to emphasize student comprehension, and to show much student cooperativeness and little student disruptiveness.

Table 9

Second-Order Factor Analysis of Classroom Measures

1st Order Factors (items)	Loadings on Factors						h^2
	1	2	3	4	5	6	
Relaxed, friendly vs. tense, rejecting[6]	.91	-.16	-.02	-.04	.08	.24	.92
Involvement, interest vs. boredom[5]	.89	.11	-.07	-.06	.09	.23	.88
Teacher hostility, annoyance, criticism[3]	-.87	-.04	.04	-.06	.09	.02	.77
Coldness, criticism vs. warmth, praise[7]	-.84	.05	-.11	.02	-.09	.05	.73
Emphasis on S comprehension, exploration vs. memory, rote[7]	.69	-.08	-.28	.00	-.14	.48	.80
Extra-curricular stimuli[1]	.57	-.12	.05	-.35	-.04	-.07	.47
Unusual "fun" activities (neg)[2]	-.48	.38	.33	-.06	-.22	.01	.54
Calm, orderly task orientation vs. excited, unruly spontaneity[6]	.06	.92	.06	.08	.05	-.17	.88
Teacher control, dominance vs. permissiveness, encouragement of S autonomy[7]	-.23	.80	.22	.01	.10	-.24	.81
General student disruptiveness, hostility (neg)[4]	.53	.75	-.06	.01	-.03	.06	.86
Ss controlled, compliant, orderly vs. independent, autonomous, varied[5]	-.31	.65	.54	.31	.02	-.20	.95
Inter-student cooperation, friendly interaction while working[4]	.51	-.57	.01	.04	.16	.43	.80
Disruptive vs. smooth shifting of activities[2]	-.44	-.57	-.03	.13	-.20	-.16	.61
Physical openness, accessibility of material and equipment to Ss (neg)[1]	-.28	.52	.37	.17	-.14	.10	.54
Restrictiveness vs. freedom[8]	-.10	.50	-.01	.29	.32	-.04	.45
Individualization, flexibility vs. nondifferentiation, rigidity[8]	.08	-.44	.09	-.05	.02	.18	.24
Ungraded, roomy vs. graded, crowded[1]	.01	-.39	-.33	-.34	-.03	.39	.52
Common vs. varied simultaneous activities[2]	.08	-.05	.83	.43	.03	-.06	.89

Table 9 (continued)

Items	Loadings on Factors						h^2
	1	2	3	4	5	6	
Student independent, autonomous activity (neg)[4]	-.27	.33	.74	.21	.21	-.04	.82
Diversity, variety vs. repetitiveness, commonality[6]	.48	-.31	-.61	-.30	.03	.22	.84
Self-containedness vs. departmentalization[8]	-.10	.05	-.53	-.14	.26	-.05	.38
T individual attention, consultative role (neg)[7]	-.11	.10	.20	.83	.18	.20	.82
S-initiated interaction with T[4]	-.02	-.14	-.18	-.82	.00	.05	.73
T interaction with individuals or subgroups vs. total class[3]	.09	-.23	-.41	-.73	.10	-.07	.78
Commercial vs. S-made wall decorations[1]	-.02	-.10	.05	.52	-.02	-.21	.32
Attentive, responsive S work under T direction[4]	-.15	.13	-.14	.16	.86	-.06	.83
Encouragement of active, academic student participation[3]	-.01	.22	-.23	.10	.82	-.03	.78
T lethargy, dryness vs. energy, flamboyance[7]	-.29	.08	-.22	.15	-.71	-.12	.68
T personal expression, warmth, friendliness[3]	.27	-.27	.49	-.03	.51	.29	.73
No. of children and adults in class[1]	.28	-.27	.24	-.14	.36	-.17	.39
Divergent tasks vs. convergent[5]	.09	-.40	.19	-.06	-.28	.71	.79
T encouragement of S expressiveness and exploration vs. drilling[3]	.27	-.09	-.15	.14	-.03	.71	.63
T sole control, decision-making vs. S participation in decisions, autonomy[8]	.02	.10	-.05	.19	-.33	-.58	.49
Percent of variance	25.5	14.3	10.5	8.3	5.3	4.8	(68.7% tot.)
Eigenvalue	8.40	4.72	3.46	2.75	1.74	1.60	

1. First-order factors from Observation Form Cover Sheet
2. First-order factors from Observation Form Organization section
3. First-order factors from Observation Form Teacher Activities section
4. First-order factors from Observation Form Student Activities section
5. First-order factors from Observation Form Student Ratings section
6. First-order factors from Observation Form Class Ratings section
7. First-order factors from Observation Form Teacher Ratings section
8. First-order factors from Teacher Description of Classroom Activities Questionnaire

The next two second-order factors each include elements of student autonomy, but placed in somewhat different contexts. The first of these shows the highest loading for the first-order factor, "calm, orderly task orientation vs. excited, unruly spontaneity." Other first-order factors with high or moderate loadings contrast, at their poles, classes in which teachers control and dominate activities, a clear structure is provided, activity shifting is smooth, and students' behavior is relatively restricted, with those in which students are autonomous, disruptive and hostile (but also cooperative), have access to materials and relative freedom. The general impression of the factors at the low end of this dimension is of a type of student autonomy which constitutes not so much a replacement of teacher control by student control, as an absence of control altogether. We therefore name this factor "teacher control, structure, orderly task orientation vs. permissiveness, spontaneity, lack of control."

The student autonomy represented in the next factor relates more specifically to self-directed tasks (thus the components of the first-order factor, "student independent, autonomous activity" which loads highly on this one refer to students starting or shifting their own activities, working intently on their own, and forming their own work groups); here the autonomy does seem to represent the replacing of external with internal control. The other high-loading first-order factors are "common vs. varied simultaneous activities" and "diversity, variety of stimuli vs. repetitiveness, commonality, sparseness." Classes in which the students determine and shift their own activities are likely to display a wide variety of different activities at any given time. The factor is called "imposed, common, repetitive activities vs. student-initiated (and -maintained) varied, simultaneous activities."

The fourth of these second-order factors contains three high loadings and one moderate one. The high loading first-order factors each refer to teacher interaction with individuals or subgroups: "teacher individual attention, consultative role," "student-initiated interaction with teacher," and "teacher interaction with individuals or subgroups vs. total class." The factor is named "individualized teacher-student interaction, teacher consultative role" (negatively scored). The first-order factor with the moderate loading, "commercial vs. student-made wall decorations," suggests that the individualized class is more likely to make use of individual productions in this way.

Classes at the positive extreme of the fifth factor are characterized by teachers who are energetic, dramatic, personally expressive and warm, and who promote active student academic and verbal participation in class activities, and by students who do participate actively and attentively. Classes at the negative extreme have teachers who are relatively lethargic and dry, show little personal expressiveness and warmth, and tend not to actively promote student participation. The factor is called "energetic teacher promotion of student academic participation."

The last of these second-order factors is named "emphasis on student expressiveness, exploration, and creativity." The highest loadings are obtained for "divergent tasks vs. convergent" and "teacher encouragement of student expressiveness and exploration vs. drilling." Moderate loadings are also obtained for factors reflecting teacher control vs. student autonomy and the teacher's emphasis on student comprehension and exploration.

The six obtained second-order factors are comparable with other attempts to identify basic dimensions of behavioral styles and group atmospheres (including classrooms, families, occupational groups, etc.). The first two factors found here are basically the same two which have been found centrally in many of these other investigations--"warmth vs. coldness" and "control vs. permissiveness." The other factors found here seem more specifically limited to educational settings.

Some other recent attempts to describe basic classroom characteristics by factor-analyzing observations have been reported by Soar and Soar (1972), Emmer and Peck (1973), and Samph and White (undated). Soar and Soar (1972) used four observation systems with a sample of follow-through classrooms. They factor-analyzed each system separately, producing a total of 27 factors, and did not do a second-order factor analysis. Three of these factors seem clearly related to the present "warmth" factor ("warm emotional climate," "teacher negative affect...," and "teacher acceptance"), two to the present "control, orderliness" factor ("teacher directed activity" and "teacher evaluation and control") and one, possibly, to our "commonality vs. variety of activity" ("free choice vs. structured learning in groups"). Their other factors defined different and more specific aspects of the classroom environment than those emerging in the present research. Emmer and Peck (1973) reported a second-order factor analysis of five sets of classroom behavior factors, derived from different observation systems. This analysis produced 11 factors, many of which can be related to those in the present study. Thus, our "warmth" seems represented in their "negative affect" (negatively) and "teacher support for correct response," our "control" in "teacher controlling behavior" and "pupil presentation of ideas," our "individualized interaction" by "teacher-initiated problem-solving," our "encouragement of academic participation" by "pupil unresponsiveness" (negatively), and our "emphasis on student expressiveness" by "restrictive vs. expansive teaching." The Samph and White study (undated) constituted a second-order factor analysis of factors derived from six classroom observation systems. This analysis resulted in five factors which seem similar to three of those found in the present study: "warmth" (which compares to the reverse of "negativism" and "teacher nonsupportive behaviors"), "control" (which compares to "teacher directing the communication process" and "teacher monitoring") and "encouragement of academic participation" (which compares to "teacher encouragement of content-oriented interaction").

Some other researchers have measured classroom climate through questionnaires in which students describe their classrooms (Walberg and Anderson, 1968; Stern and Walker, 1971; Trickett and Moos, 1973). Each of these instruments contains sets of items describing a priori scales, which are typically not factor analyzed. Some of these scales also seem similar to some of the obtained dimensions in the present study (each of the questionnaires, again, have scales representing aspects of "warmth" and "control"). The Trickett and Moos questionnaire relates the most closely to the present results. It contains nine scales representing four "functions": an "affective relationship" function contains three scales-- "involvement," "affiliation," and "support"--all of which would seem to be included in the present study's "warmth" factor; a "system maintenance and authority" function contains three scales-- "order and organization," "rule clarity," and "teacher control" -- which relate to the present "control, orderliness;" a "system change" function contains one scale-- "innovation" -- which relates to the present "commonality vs. variety of activity;" and a "goal orientation" function contains two scales -- "task orientation" and "competition"--which seem to relate (not as clearly, however) to the present "encouragement of academic participation."

Deriving Dimensions of Child Characteristics and Educational Outcomes

Preference, Orientation and Motive Scales

Item analyses and reliability. Internal consistency reliability was assessed for these scales, and for most of the other questionnaire-derived scales in this study, by applying the Spearman-Brown formula to the mean of inter-item correlations (Guilford, 1956, Nunnally, 1972). All of the preference, orientation and motive scales which had obtained low reliabilities in the pilot study were revised (including both rewriting and adding items) for the present study. In almost all cases, low reliabilities were improved while scales with high reliabilities previously (which were not revised) remained acceptably reliable. The locus of control and social desirability scales, which had been shortened, also maintained acceptable reliabilities. One exception occurred with the achievement motivation scale. Although five of its 20 items were changed to some degree, the reliability in the present study was actually lower than it had been in the pilot study (.26, as compared with .32). Since many of the achievement motivation items were similar to those in the fear of failure scale, and since the latter scale's reliability was also relatively low (although it had improved as a result of the revision--.46, as compared with .34 in the pilot study), it was decided to factor-analyze the combination of items from both scales, and attempt to extract more reliable sub-groupings of items. Three factors were derived, and rotated orthogonally. Items with loadings of at least .30 on one factor, and which also clustered together in a meaningful way, were grouped into three new scales. The items in these scales, and their item-total correlations are presented in Table 60, Appendix A. The first scale is called "preference for challenging tasks vs. avoidance of risk" and contains 10 items, mostly indicating preferences for difficult or risky tasks or games. The second scale is called "preference for interpersonally equal vs. dominated situations" and includes 5 items which reflect liking for games where "everyone is about the same" or "I am about as good as my playmate" vs. "where I'm better than anyone else" or "much better than my playmate," and for classroom situations reflecting a similar dimension. The third scale, containing four items, was called "academic motivation," and represents a stated preference for trying to learn and for doing school work over relaxing and playing.

To obtain scales from the 26 items asking children for their preferences among different sets of classroom characteristics, a similar procedure was followed. The items were initially factor analyzed. Although rotations of several numbers of factors were tried, and a three-factor solution produced the most coherent results, none of the rotations was completely satisfying conceptually. Therefore, the three-factor solution was used as a general guideline and nucleus, and items were grouped into scales using the factor information and our own perception of meaningfulness of clustering as criteria. Three scales were derived; the item-total correlations are shown in Table 61, Appendix A. The first, "preference for classes with freedom of activity (vs. restrictiveness)," contained six items reflecting children's preferences for classes in which they would be free to get materials, talk, walk around, etc. at will, as opposed to doing so only at teacher direction. The second class preferences scale was called "preference for classes which allow children autonomy (vs. classes with teacher control)," and also contained six items, mostly referring to preferences for classes in which children rather than teachers make decisions about their activities. The third scale contained four items and was called "preference for classes where students are involved in teaching (vs. teacher monopolization)". The items in this scale refer to classes in which children (vs. the teacher) help each other, check each others' work, teach each other, and talk about each others' work.

The internal consistency reliabilities for these six new scales ranged from .48 to .70. These reliabilities, and those of the other preference, orientation, and motive scales, are presented on the far right of Table 10.

Factor Analysis. All of the preference, orientation and motive scales were included in a factor analysis, the results of which are shown in Table 10. Four factors were retained and rotated to orthogonal simple structure.

All three of the class characteristics preferences scales, referring to children's preferences for classes with student autonomy, freedom of activity, and participation in teaching activities, show high or moderate loadings on the first factor. There is also a moderate positive loading for "personal expression vs. structured role orientation," and a moderate negative one for "I- (responsibility for failures)." With the exception of I-, these scales all seem to refer to aspects of student freedom and autonomy. The factor is therefore labeled "preference for classes with student autonomy." The negative loading for I- suggests that students who state a preference for autonomy also tend to deny responsibility for their own failures. It is conceivable that an autonomous classroom situation, where teachers

Table 10

Factor Analysis of Preference, Orientation and Motive Scales

Scale	Loadings on Factors					
	1	2	3	4	h^2	r_{kk}
Preference for classes which allow children autonomy (vs. T control)	.73	-.24	-.01	-.20	.63	.70
Preference for classes with freedom of activity (vs. restrictiveness)	.67	-.15	-.06	-.31	.57	.62
I- (responsibility for failures)	-.50	-.07	.28	.06	.33	.70
Preference for classes where students are involved in teaching (vs. T monopolization)	.48	-.08	-.05	.03	.24	.48
Personal expression vs. structured role orientation	.45	-.38	.04	-.04	.35	.54
Social desirability	-.08	.66	.08	.13	.46	.83
Bureaucratic orientation (SEPS)	-.21	.62	-.10	-.12	.45	.84
I+ (responsibility for successes)	-.34	-.10	.52	-.03	.40	.57
Intrinsic motivation	.00	-.26	.52	.14	.36	.66
Locus of instigation	-.01	.12	.51	.00	.28	.53
Preference for interpersonally equal (vs. dominated) situations	-.17	.01	.43	.27	.29	.61
Generality of strong task preferences	.03	.16	.25	.10	.10	.69
Academic motivation	-.17	.35	.10	.44	.36	.48
Preference for challenging tasks (vs. risk-avoidance)	-.16	-.19	.32	.40	.32	.61
Percent of variance	22.9	14.9	9.4	7.2	(54.4% total)	
Eigenvalue	3.21	2.08	1.32	1.00		

exert relatively little direct control over students and classroom activities, is seen as one where success and failure attributions are made less frequently, and may therefore seem attractive to children who want to avoid such attributions. Although some of the components are different, a similar factor was obtained in the pilot study, and called "preference for open situations."

The second factor contains only two high-loading items, "social desirability" and "bureaucratic orientation." Each of these scales describes an orientation toward compliance with adult-prescribed rules, norms and values. The factor is therefore named "compliant, conforming orientation." A very similar factor was obtained in the pilot study, and given the same name.

The highest loading items on the third factor are "I+," "locus of instigation," and "intrinsic motivation." The first two refer to the individual's belief that he is responsible for the successful outcomes of his own activities, and for the initiation of the activities in the first place; both deal with the individual's feeling of personal control. The third item, "intrinsic motivation," refers to participating in activities for self-defined reasons and rewards (rather than externally-defined ones). While not identical with personal control, such a quality seems quite consistent with it. In order to maintain both aspects in the designation of this factor, the name, "personal control/intrinsic motivation," was given to it. These two aspects did not fall on the same factor in the pilot study.

Two items with moderate loadings define the fourth factor, "academic motivation" and "preference for challenging tasks (vs. risk avoidance)". These are both scales derived from the original achievement motivation and fear of failure scales. The label "achievement motivation" seems an accurate representation of their combination.

Factor Analyses of Achievement Tests

Third grade tests. Subscores from the Cognitive Abilities Test and the Iowa Test of Basic Skills which the children had taken at the end of the third grade were included in a single factor analysis, shown in Table 11. Similar to a parallel analysis in the pilot study, a single, clear factor emerged, with no low loadings, and no discernable differentiation between measures of "ability" and of "achievement." We call this factor "prior achievement."

Fourth grade tests. A similar result was produced by a factor analysis of the scales of the California Achievement Test administered to the children in the study at the end of the fourth grade (the year of the study). This analysis, presented in Table 12, also produced a single factor with high loadings for all subtests. The factor is named "achievement test performance."

Creativity and Inquiry Skill Measures

Reliability. Reliabilities of the measures of creativity and inquiry skill (as well as that of writing quality, which was derived from the same responses as inquiry skill) were assessed in two ways. The first involved an assessment of inter-coder agreement. Five classrooms were randomly selected from the total set of classrooms in the study. Creativity, inquiry skill and writing quality responses from these five classrooms were each coded independently by a second coder in addition to the primary coder for each item (who coded the responses from all 50 classrooms). Inter-coder correlations for each of the coding categories and ratings from these items are presented in Table 13. The correlations appear to be generally adequate, with a few exceptions.

Reliability was also assessed for the total sample by applying the Spearman-Brown formula to the correlations between the two items of each type at each testing period, as scored by the primary coder. For example, the pretest "Uses" scores were derived from two items, "chair" and "button." For each coding category (e.g., "percent uncommon responses") the correlation between the two items was entered in the Spearman-Brown formula. The summed scores, across the two items of each type, were then used in subsequent factor analyses. Results of these factor analyses, with

Table 11

Factor Analysis of Third Grade Cognitive Abilities and Achievement Tests

Subtests	Loadings	h^2
Cognitive Abilities: verbal	.91	.83
Cognitive Abilities: quantitative	.82	.67
Cognitive Abilities: nonverbal	.73	.54
ITBS: Vocabulary	.84	.71
ITBS: Reading	.84	.71
ITBS: Spelling	.80	.61
ITBS: Capitalization	.76	.57
ITBS: Punctuation	.78	.60
ITBS: Language Usage	.82	.67
ITBS: Map reading	.82	.67
ITBS: Graphs and tables	.81	.65
ITBS: Reference materials	.86	.75
ITBS: Arithmetic concepts	.84	.70
ITBS: Arithmetic problems	.82	.67
Percent of variance	69.0	
Eigenvalue	9.66	

the reliability coefficients, are presented in Table 14. (Because writing quality was a distinct construct, and seemed of sufficient potential interest to maintain as a separate variable, it was not included in the factor analyses; its reliability, which therefore does not appear in Table 14, was .51 for the pre-test items and .54 for the post-test items.) Correlations between the pre- and post-test administrations of the parallel measures are also presented in this table (the pre - post

Table 12

Factor Analysis of Fourth Grade Achievement Tests

Subtests	Loadings	h^2
CAT: Reading vocabulary	.81	.66
CAT: Reading comprehension	.84	.70
CAT: Math computation	.77	.60
CAT: Math concepts	.84	.70
CAT: Capitalization	.72	.53
CAT: Language usage	.68	.47
CAT: Spelling	.79	.62
Percent of variance	66.5	
Eigenvalue	4.66	

correlation for writing quality was .43).[1]

Factor Analyses. The creativity and inquiry items were put into two factor analyses, one including the pre-test scores, the other, the post-test scores. The pre- and post- analyses were generally quite similar. Each produced two clear factors, one representing creativity and one representing inquiry. While the relative ordering of the factor loadings for the creativity factor is somewhat different in the two analyses, with more weight for the patterns items in the pre-test analysis,

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[1] Since seven months intervened between the pre- and post-questionnaire administrations, and during that time the children in different classrooms were subjected to different environments and experiences which were expected to have differential effects on various outcomes, these pre-post correlations were expected to be positive, but generally only moderate. On the whole, this is what occurred, both with the creativity and inquiry indices, shown here, and the attitude and value scales, shown in Table 15. Indeed, very high correlations (as are frequently obtained with test-retest reliabilities over shorter time periods) would be inconsistent with the major goals of this research (to find classroom environment main effects, and environment by person interactions), because too much of the outcome variance would be accounted for by initial status, leaving too little to be allocated to these other sources.

Table 13

Intercoder Correlations for Selected Subsample of Protocols (N=98-101):

Creativity, Inquiry Skill, and Writing Quality

Item	Creativity Categories			
	No. appropriate responses	% Uncommon responses	Elaboration rating	Imagination rating
Uses, Pre:				
Chair	.92	.78	.56	.60
Button	.90	.78	.77	.73
Patterns, Pre:				
Pattern 1	.95	.79	.76	.79
Pattern 2	.97	.83	.69	.84
Uses, Post:				
Cork	.95	.75	.75	.78
Shoe	.98	.89	.71	.66
Patterns, Post:				
Pattern 3	.97	.71	.71	.61
Pattern 4	.98	.76	.74	.74
	Inquiry Skill and Writing Quality Categories			
	No. informative responses	% site-extended responses	Completeness rating	Writing Quality rating
Pre:				
Bridge location	.79	.36	.71	.41
Ghost town	.50	.52	.64	.65
Post:				
Playground location	.78	.31	.71	.67
Disordered room	.84	.15	.59	.55

Table 14

Factor Analyses of Pre- and Post-Test Creativity and Inquiry Scores

Categories	Pre-test Analysis				Post-test Analysis				Pre Vs. Post Corrs.
	Loadings				Loadings				
	1	2	h^2	r_{kk}	1	2	h^2	r_{kk}	
Number appropriate responses, uses items	.60	.37	.49	.60	.70	.28	.57	.66	.42
Percent uncommon responses, uses items	.37	.29	.22	.37	.56	.19	.35	.43	.18
Elaboration, uses items	.41	.25	.23	.46	.61	.11	.38	.51	.31
Imagination, uses items	.54	.40	.46	.45	.82	.22	.72	.59	.35
Number appropriate responses, patterns items	.70	.04	.49	.60	.53	.22	.33	.70	.34
Percent uncommon responses, patterns items	.56	.02	.32	.23	.35	.11	.14	.11	.07
Elaboration, patterns items	.70	.14	.51	.48	.52	.19	.31	.57	.32
Imagination, patterns items	.88	.04	.77	.54	.69	.24	.54	.54	.28
Number of informative responses, inquiry items	.16	.85	.76	.43	.27	.87	.84	.50	.35
Percent site-extended responses, inquiry items	.05	.42	.18	.13	.07	.19	.04	.00	.12
Completeness of response, inquiry items	.09	.93	.86	.41	.23	.94	.93	.50	.38
Percent of variance	38.6	16.7	(55.4% tot)		41.4	11.9	(53.3% tot)		
Eigenvalue	4.25	1.84			4.55	1.30			

and more for the uses items in the post-test analysis, the general set of loadings is strong enough throughout the creativity categories so that "creativity" seems an appropriate designation of the first factor in each analysis. Each of the inquiry items has its highest loading on the second factor in both analyses. The rating of "completeness" and the "number of informative responses" have very high loadings (almost identical between the two analyses), while the loading of "percent site-extended responses" is very much lower in each case. This factor is called "inquiry skill."

The creativity and inquiry items also defined separate factors in the pilot study.

Attitude and Value Scales

Item analyses and reliability. Many of the attitude and value scales were revised after the pilot study. All of the internal consistency reliabilities were improved as a result of this revision (with the exception of the pre-test administration of concern for others which remained the same at .47), but some were not improved enough. Examination of inter-item correlations for the still-unreliable scales revealed some items which seemed incompatible with their scale-fellows. One item each in the self-direction, compromise, and cooperation scales had multiple negative correlations with the other items in the scale, both in the pre- and post-test administrations. Accordingly, these items were removed and the reliability recalculated. Omitting the bad item from the scale measuring value on self-direction ("If you are puzzled about something, it is always better to try to find the answer for yourself than to have someone tell it to you"--item 1, p. 2 Booklets F and K) increased the reliability coefficient from .32 to .38 for the pre-test, and from .36 to .42 for the post-test; slightly better but still far from ideal. The omitted compromise item was "When you have an opinion, you should stick to it even if everyone says you're wrong" (item 11, p. 3, Booklets F and K); its removal increased the reliability coefficient from .23 to .37 in the pre-test, and from .31 to .50 in the post-test. The item dropped from the value on cooperation scale was "School is nice only if everybody shares everything" (item 36, p. 8, Booklets F and K). Its omission raised reliabilities from .33 to .38 for the pre-test, and from .42 to .46

for the post-test. For the subsequent factor analyses of these scales, new totals were calculated with these items omitted.

Factor Analyses. The results of the factor analyses of the pre- and post-test administrations of the value and attitude scales are presented in Table 15. Although not identical, the patterns of loadings on the four factors which were extracted in each analysis are generally similar.

The first factor in each analysis is primarily defined by three items, "tolerance for differences," "assertion responsibility," and "self-esteem." The same items comprised a factor in the pilot study also (although self-esteem was relatively stronger in that analysis). The combination of thinking well of oneself (self-esteem), feeling sufficiently sure of oneself to believe in stating one's opinions even if unpopular (assertion), and to accept nonconformists (tolerance for differences) led us to call this factor "self confidence," the same name which was given it in the pilot study.

The second factor includes two of the democratic attitudes subscales, "equality of representation" and "equality of participation." These scales have a concern with equality as a common element; the factor is therefore named "value on interpersonal equality." (These same two scales were also the prime determinants of one of the pilot study factors.)

The third factor shows a cluster of relatively high loadings for "value on cooperation," "concern for others," and "compromise" (the first two of these helped to define a factor in the pilot study). We consider "concern for others" to be the essential element here; both cooperation and compromise would seem to depend on a willingness to take the other party's needs and objectives into account. The factor is named "concern for the welfare of others."

Although the signs of the item loadings on the fourth factor are reversed between the pre- and post-test factor analyses, it can be seen that the two factors

Table 15

Factor Analyses of Pre- and Post-Test Attitude Scales

Scales	Pre-test Analysis						Post-test Analysis						Pre Vs. Post Corrs.
	Loadings				h^2	r_{kk}	Loadings				h^2	r_{kk}	
	1	2	3	4			1	2	3	4			
Tolerance for differences (value on heterogeneity)	.59	.08	.29	.05	.44	.61	.41	.21	.36	.00	.35	.62	.45
Assertion responsibility	.35	.32	.29	-.07	.32	.61	.44	.31	.31	.09	.39	.66	.47
Self-esteem	.29	.05	-.01	.04	.09	.75	.28	.04	.04	-.02	.08	.79	.44
Equality of representation	.18	.57	.25	-.12	.44	.47	.12	.67	.23	.18	.55	.48	.38
Equality of participation	.17	.49	.20	.12	.32	.43	.18	.44	.27	-.07	.31	.45	.30
Value on cooperation (vs. comp.)	.16	.12	.49	.11	.29	.38	.11	.20	.47	-.15	.30	.46	.40
Concern for others	-.04	.11	.43	-.01	.20	.47	.02	.12	.51	-.02	.27	.58	.32
Compromise	.20	.13	.43	-.14	.26	.37	.23	.14	.51	.09	.34	.50	.43
Value on group activities	.02	.10	.10	.56	.33	.68	-.14	.03	.17	-.36	.18	.74	.29
Value on self-direction	-.01	.06	.06	-.24	.06	.38	-.01	.00	.05	.47	.22	.42	.29
Value on decision-making autonomy	-.18	.27	-.02	-.24	.16	.77	-.13	.10	.01	.25	.09	.79	.46
Percent of variance	21.8	11.8	9.8	9.4	(52.8% tot.)		24.2	11.9	9.7	8.5	(54.2% tot.)		
Eigenvalue	2.40	1.30	1.08	1.03			2.66	1.31	1.07	.93			

are generally similar except for this reversal. In each case "value on self-direction" and "value on decision-making autonomy" tended to define one pole of the factor, while "value on group activities" defines the other. ("Autonomy" and "self-direction" comprised separate factors in the pilot study; it seems conceptually more reasonable for them to cluster together.) This factor poses a value on self-determined task activity and autonomous decision-making against one on participating in group activities. Group participation requires interacting with others and occasionally giving way to others and letting others determine activities. Thus it may reduce the possibilities of purely personal autonomy. The factor is called "value on self-direction vs. group participation."

In order to produce clearly comparable scores for use in subsequent analyses, the factor scores for both of these analyses were produced by applying the factor score coefficients for only one of them--the post-test analysis--to each set of (standardized) original scale scores. In other words, a common set of scale weightings was used to produce both sets of factor scores (pre- and post- attitudes).

Factor Analyses of Student Self- and Class-Evaluations and of Teachers' Ratings of Students

Student self- and class-evaluations. The factor analyses of the eight evaluation items, shown in Table 16, produced three factors.

The first factor obtained high loadings for the students' ratings of their schools as having been "interesting" and "fun" during the year, and moderate loadings for their estimates of the amount they learned during the year and of the helpfulness of the children in the class. The high loading items were given more weight in naming the factor "enjoyment of class."

Two items, both referring to the student's friendships in the class, determine the second factor which is therefore called "social involvement in class."

The primary item on the third factor is "How often do kids in this class get

Table 16

Factor Analysis of Student Self- and Class-Evaluations

Items	Loadings			
	1	2	3	h^2
How interesting have you found school this year?	.72	.09	-.02	.53
How much fun have you had in school this year?	.63	.18	-.05	.44
How much do you think you have learned in school this year?	.48	.08	.05	.24
How often do kids in this class help each other?	.39	.23	-.25	.26
How many kids in this class would you like to stay close friends with?	.18	.74	-.02	.58
How many of the other kids do you think would like to stay close friends with you?	.15	.71	-.02	.52
How often do kids in this class get mad at each other or fight?	-.12	-.04	.59	.36
How many kids do you think don't have many friends in this class?	.03	.00	.21	.05
Percent of variance	30.1	15.0	14.3	(59.4% tot.)
Eigenvalue	2.40	1.20	1.15	

mad at each other or fight?" There is also a small positive loading for the rating of the number of social isolates in the class, and a small negative one for the rating of the amount of inter-student helping. The latter two seem consistent with the primary item, and with a designation of the factor as "perceived class disruptiveness."

The analysis of the same items in the pilot study also produced three factors with a quite similar pattern of loadings. The names given the present factors are the same as those used in the pilot study.

Teachers' ratings of students. As mentioned earlier, the rating scale which teachers used to present their perceptions of the children's classroom behavior was shortened from the 30-item form (with 5-point scales) used in the pilot study to an 11-item form (with 4-point scales). While the items were in some cases taken directly from the pilot study and in other cases newly devised, they were intended to represent each of the five factors obtained in that study. It was, then, expected that a similar set of factors would emerge from this shorter version. As can be seen in Table 17, this did not occur; only two factors emerged from this rating scale.

All but two of the items load most highly on the first factor. The strongest of these refer to the child's perseverance, hard work, cooperativeness, self-control, and achievement motivation. We call this factor "task perseverance, social maturity."

The two items with relatively high loadings on the second factor are "highly active, energetic" and "curious about many things." These seem to represent mutually consistent characteristics. In order to convey this total combination, the factor is called "active, energetic, curious."

While these two factors do seem to represent meaningful combinations of items, we had expected a somewhat more differentiated grouping, as was obtained in the pilot study. The pilot study results constitute clear evidence that teachers perceive children in terms of more than one or two dimensions. It may be that a scale longer than the 11-item one used in the present study (and perhaps as long as 30 items), with a more specific set of descriptive items, is necessary to bring out the finer discriminations represented by the larger number of factors.

Table 17

Factor Analysis of Teacher Ratings of Students

Rating Items	Loadings		h^2
	1	2	
Works hard in class	.84	.19	.75
Cooperative, does what is asked	.83	.01	.68
Perseveres with tasks	.82	.28	.75
Self-controlled	.81	-.22	.71
Works well with other children	.74	.13	.56
Not satisfied until good understanding of topic or task is achieved	.70	.40	.66
Learned much this year	.63	.40	.55
Highly involved in class activities	.63	.52	.67
Looked up to by other children	.58	.37	.47
Highly active, energetic	-.12	.66	.45
Curious about many things	.44	.56	.51
Percent of variance	55.2	13.6	(68.8% tot.)
Eigenvalue	6.07	1.50	

Identifying Classroom "Types" and Child "Types"

The various child and classroom "dimensions" produced by the factor analyses described in the preceding sections appeared to be meaningful and potentially useful; further analyses concerning them will be presented in subsequent sections. It was also decided, however, to take these dimensions an additional step in order to see whether we could use them to group the children and the classrooms into small sets of identifiable "types," each type containing members with similar profiles in terms of the selected dimensions. Our hope was that, if we could come up with empirical groupings which were conceptually meaningful, we would then have available a way of looking at the effects on various educational outcomes of entities representing children and classrooms in their natural groupings and with much of their natural complexity retained. This was seen as a potentially useful supplement to (and perhaps eventually even a replacement for) the more typical approach which would analyze one or two isolated or abstracted dimensions at a time, looking at their main effects and interactions, while ignoring or attempting to hold constant statistically the simultaneous effects of other significant dimensions. The approach based on natural groupings accepts the complex of dimensions represented in a group profile, and looks at its total effects compared with those of other groupings. While intuitively this approach seems more likely to accurately represent social (and educational) reality, which is complex, involves multiple simultaneous influences from numerous sources, and (perhaps) actually does form limited numbers of constellations of attributes (i.e., natural groupings), whether it will actually provide for greater theoretical development and greater usefulness in attempts at practical applications has yet to be demonstrated. Some of the discussion in the final section of this report will attempt to make such comparisons.

Cluster Analysis of Classrooms

Cluster analysis is a technique which groups cases into "clusters" based on the similarity of their profiles. Its purpose is to identify groupings which are maximally differentiated between clusters and maximally similar within clusters. Several cluster analysis methods have been developed; four were tried with the classroom factor profiles. One was a "Q" factor analysis method which factors cases (over items) rather than items or tests (over cases), and produces factors which represent differentiated groupings of cases; one was a "Linear Typal Analysis" method described by Overall and Klett (1972); one was a "cluster buildup" method developed by Lorr (1967); and one was McQuitty's (1957) "Elementary Linkage Analysis" In each analysis, the profile of six classroom factor scores for each classroom provided the basic data.

Unfortunately, these four methods produced somewhat different results, although there was a certain degree of overlap. A procedure to select a single set of clusters from these was improvised. Several sets of "core clusterings" were developed; each of these started from the vantage point of one of the clustering methods and identified for each cluster those classes which also fell into the same group by at least two of the other clustering methods. A discriminant function analysis (from SPSS; Nie et al, 1975) was then applied to each of these "core clusterings," and each of the remaining classrooms was assigned to the "core cluster" which it most closely resembled, by the discriminant function criterion. Most of these methods produced six classroom clusters. The final clustering which produced the most meaningful and interpretable group profiles (and which also, in later analyses, most strongly showed differentiation between types of children in their performance with respect to various outcomes), was the one built up from the six "core clusters"--originally involving 24 classrooms--based on the "Q" analysis approach.

Profiles for each of these classroom clusters are presented in Table 18. The profile components are the factor score means for all the classrooms grouped into a given cluster. Within-group standard deviations, and F values showing the degree

Table 18

Classroom Clusters: Means, Standard Deviations, and F Ratios for Cluster Components (Classroom Factor Scores)

Classroom Clusters		Classroom Factors					
		Warmth, Friendliness vs. Coldness	Control, Orderliness vs. Lack of Control	Commonality vs. Variety of Activities	Non-individualized vs. Individualized Interaction	Energetic Encouragement of Academic Participation	Emphasis on Student Expressiveness
One (N=10)	Mean S.D.	.49 .90	-1.29 .97	-.64 1.31	-.37 .88	.14 .65	.28 .77
Two (N=10)	Mean S.D.	-.63 .54	1.11 .54	-.60 .73	.51 .84	-.25 .66	-.05 .63
Three (N=9)	Mean S.D.	-.87 1.10	-.29 .54	.91 .57	.27 1.29	.32 1.10	.58 .99
Four (N=8)	Mean S.D.	.76 .61	.45 .48	-.01 .80	-.09 .86	.15 .64	-.98 .89
Five (N=6)	Mean S.D.	.82 .56	.00 .51	.16 .63	.30 1.01	-1.58 .68	.97 .83
Six (N=7)	Mean S.D.	-.26 .73	.12 .48	.47 .70	-.70 .75	.94 .75	-.79 .55
Total Sample (N=50)	Mean S.D.	.00 1.00	.00 1.00	.00 1.00	.00 1.00	.00 1.00	.00 1.00
F ratios (5, 44 df) (between clusters)		7.29**	15.54**	4.57*	1.88	7.88**	6.84**

* $p < .01$
** $p < .001$

to which the clusters are differentiated according to each of the components (factors) are also shown in Table 18. These indicate that, with the exception of individualized interaction, each of the components was strongly differentiated between the clusters. In the following paragraphs, we will describe each of these obtained clusters.

Cluster one. The most salient attribute of the classrooms comprising this cluster was their extreme permissiveness, lack of control, and student autonomy (classroom factor two). None of the other clusters approached the position of this one with respect to this component. Cluster one classrooms also tended to have varied, student-initiated activities and relatively individualized teacher-student interaction. They were in the moderate range with respect to warmth, energetic encouragement of academic participation, and emphasis on student expressiveness. Although these classrooms showed some of the characteristics which have been attributed to "open" classrooms, their extreme lack of control and order was beyond that recommended in the ideal "open" classroom (in most descriptions), where control is shared between teacher and students. We are unable to provide cluster names which accurately reflect the total complex of components making up the profiles. As a shorthand description, however, we consider cluster one to represent classrooms which are permissive and uncontrolled, with much student autonomy.

Cluster two. Classrooms in cluster two were very highly controlled and orderly, but students also had relatively great opportunity to initiate their own, varied, activities. To put it slightly differently, teachers in these classrooms provided for an overall structure and a disciplined approach to tasks, but within this framework, students were free to select and direct their own particular activities. Classrooms in cluster two also tended to be somewhat cold, and to have undifferentiated (rather than individualized) interaction between teacher and students. They were moderate with respect to encouragement of academic participation and emphasis on student expressiveness. We would describe these classrooms as providing for a substantial degree of student self-direction within a controlled, disciplined, non-individualized and somewhat impersonal setting. The profile gives the impression of a rather serious, business-like, and, in a certain sense, autonomous orientation to classroom tasks.

Cluster three. Classrooms in the third cluster tended to be cold and unfriendly and to have common (whole class) activities. They were also moderately permissive and uncontrolled, and were somewhat oriented toward both student expressiveness and academic participation. Teacher-student interaction was slightly non-individualized. This cluster provides an interesting contrast with the second cluster. Both tended to be cold and somewhat unfriendly (cluster two less so, however). But in cluster two, the juxtaposition of this "coldness" with the other profile components gives the impression of a no-nonsense, serious and task-oriented setting, whereas in cluster three, where it is combined with an extreme reliance on common, teacher-directed activities, but also with a fair degree of permissiveness and lack of control, the impression conveyed is rather of a setting which is relatively hostile, arbitrary and regimented, but also somewhat uncontrolled and disorganized.

Cluster four. These classrooms were quite warm, friendly and involving, and were also fairly highly controlled and orderly. They were moderate with respect to individualized teacher-student interaction and energetic encouragement of academic participation, but gave the least emphasis of any cluster to student expressiveness and creativity. It is instructive to compare this cluster profile with that of cluster two, also. Both of these clusters of classrooms tended to be controlled, orderly, disciplined and task-oriented, but for cluster two these characteristics are combined in a rather cold and impersonal atmosphere, while for cluster four, where they are combined with warmth and general involvement, the impression conveyed is of an atmosphere which is controlled, disciplined, academically oriented, and supportive.

Cluster five. Three of the component means in the profile for this cluster represented extremes. This was the highest-scoring cluster with "warmth, friendliness" and with "emphasis on student expressiveness," and the lowest-scoring with "energetic encouragement of academic participation." Mean factor scores were in the moderate range for "control, orderliness," "commonality... of activities," and "individualized teacher-student interaction." In some respects, this cluster comes closer to the "open class" ideal than does cluster one: the atmosphere is warm, friendly and involved, there is a strong emphasis on expressiveness, exploration, and creativity, and there is a moderate amount of student autonomy and self-direction (i.e., control is shared between teacher and students). However, the teacher-student interaction is not as individualized as one would expect in an open class. In summary, this profile represents classes which are warm and friendly, strongly oriented toward student expressiveness and creativity (rather than traditional academic outcomes), and moderate with respect to teacher control and student autonomy.

Cluster six. Classrooms in the sixth cluster tended clearly to encourage academic participation, and to have individualized teacher-student interaction. They did not emphasize student expressiveness, tended to have common activities, and were moderate on both the control and warmth dimensions. Focusing on the most salient components, we can describe this cluster as containing classrooms which are academically oriented, with individualized teacher-student interaction.

It will be noted that none of these profiles corresponds precisely with extant descriptions of what might be expected in "pure" examples of either "open" or "traditional" classrooms, although some components of either or both are found in virtually all the clusters. This corresponds with our initial expectation that the concepts "open" and "traditional" would prove to be too global, and that actual classrooms could more usefully be described in terms of observed combinations of attributes than with such terms. It is for this reason that we do not intend to use either of these terms to describe any of these clusters, even those which come closest to resembling classic descriptions. We prefer to use designations which are more descriptive, even if also more cumbersome.

We also want to avoid other simple terms which would tend to reduce and muddy the specific meaning of an obtained cluster. Yet it can be pointed out that some of these clusters do resemble "types" which have been identified in previous research in other settings. Thus, for example, the classic Lewin, Lippitt, and White (1939) designation of children's groups as "autocratic," "democratic," and "laissiz faire" represented characteristics not dissimilar from those seen, respectively, in the present clusters three, five (perhaps), and one. For another example, Selvin (1959) investigated the effects of four "leadership styles" (in an army setting), which he called, "paternal" (somewhat similar to the present cluster four), "persuasive" (closest to the present cluster five), "arbitrary" (possibly similar to cluster three), and "weak" (not clearly represented here, although in some respects it also resembles cluster three). A more recent study by Cunningham (1975) used a cluster analysis methodology similar to that used in the present study, but based it primarily on teachers' beliefs about instructional strategy rather than objective observations. Four clusters were produced in that study which nevertheless show some similarity to those found in the present study. One combined a strong belief in teacher control with high scores on "subject matter integration" and very low scores on "teacher empathy" and "student direction"; this seems to resemble the present clusters two and four. A second cluster in the Cunningham study was low on "subject-centeredness" and moderate on all other components; this does not correspond well with any of the present clusters. The third cluster combined "student-centeredness" and low "teacher control" and "subject integration" with high scores on "teacher empathy" and "student direction"; this seems quite similar to the present cluster one. The fourth Cunningham cluster was "subject-centered" but low on "teacher control"; this would seem to correspond the most closely to the present cluster three.

Thus, the present classroom clusters show some attributes which resemble those seen in other settings. The similarity is not close enough, however, to say that these approach anything like universal "types" of social environments or classroom environments. It does seem to suggest that there are certain fairly generally central dimensions of classroom life (and, more generally, of human group life), and that there are probably certain recurring patterns of combinations of these dimensions. Any single study, involving a particular sample of environments will probably identify some "types" which will closely resemble those found with other samples, and some which will be more limited to that sample alone. Only after comparing the results of numerous studies using similar methodologies but varying samples of environments will it be possible to say with some certainty which are the general, recurring "types" and which the more sample-specific ones. For the present, we consider the present set of classroom clusters to represent the best set of "types" which we could achieve with the present sample. The groupings of components seem to make fairly good sense. If they show meaningful relationships with the various outcome measures, and interactions with individual measures (and clusters), this will provide evidence for the potential usefulness of this set of clusters and this general approach to the problems under attack with this research. Such results will, of course, be presented in the following sections of this report. But first we will present the cluster analysis of the individual measures, parallel to that performed with the classroom measures.

Cluster Analysis of Children

A large sample is often an advantage, but it created a problem with our plan to cluster-analyze the individual children in the study; the number of children for whom we had data far exceeded the maximum number of cases which could be handled by any of the cluster analysis programs available to us. We decided to use a procedure followed by Overall and Klett (1972) when faced with the same problem--to cluster random subsamples, and then cluster the clusters. Because this promised to be a rather involved procedure which would require some extensive computer manipulations, it was necesssary to select a single clustering technique, rather than to compare the results obtained with several, as was done with the classroom cluster analyses. The Overall and Klett (1972) "Linear Typal Analysis" was the most convenient method for us to use in this way, and was therefore the one selected.

A computerized "random number generator" was adapted to produce 12 random subsamples from the total sample of 1,292 children. These subsamples ranged in size from 92 to 120. In order to produce clusters which would represent "total" children as closely as possible with the present set of data, it was decided to include as input into the cluster analyses variables covering a broad range of dispositions, attitudes, skills and interests describing the children as they were at the start of the school year. Therefore, in addition to the four preference, orientation, and motive factors, we also included measures of cognitive skills (the prior achievement, pre-creativity, and pre-inquiry skill factors plus pre-writing quality), and the four pre- attitude and value factors as cluster analysis input components.

The cluster analyses of the 12 subsamples produced a total of 62 clusters, ranging from four to six clusters in the various subsamples. These 62 clusters were then entered into a new cluster analysis, using within-cluster means on the various components. This analysis resulted in three clusters. The cluster profiles, composed of the component means (and standard deviations) for the children identified as members of each cluster, are presented in Table 19. The F ratios, showing the degree to which each component differentiates the clusters (all highly significant, it will be noted) are also presented in this table. The total number of children represented in this table, 1,035, are those for whom none of the measures represented in any of these components were missing. (This number is smaller than the number included in any of the separate factor analyses; therefore the total

Table 19

Child Clusters: Means, Standard Deviations, and F Ratios for Cluster Components (Child Factor Scores)

Person Clusters		Person Factors (plus Writing Quality)											
		Prior Ach. ieve-ment	Pre-Creat-ivity	Pre-Inqui-ry Skill	Pre-Writing Qual-ity	Pre-Self-Confi-dence	Pre-Value on Eq-uality	Pre-Concern for Others	Pre-Self-Direc-tion	Prefer-ence for Class with Auton-omy	Com-pliant Orient-ation	Per-sonal Control, Intrin. Motiva-tion	Achieve-ment Motiva-tion
One (N=383)	Mean	-.80	-.28	-.45	3.99	-.30	-.26	-.40	-.02	.03	.48	-.33	-.05
	S.D.	.85	.86	.71	1.35	.55	.66	.65	.55	.81	.69	.72	.63
Two (N=462)	Mean	.61	.28	.33	5.38	.29	.11	.30	-.13	-.32	-.18	.37	.14
	S.D.	.58	.95	1.01	1.20	.52	.72	.76	.58	.70	.74	.69	.64
Three (N=190)	Mean	.35	.07	.22	4.76	.04	.39	.12	.41	.78	-.58	-.18	-.29
	S.D.	.74	.96	.91	1.37	.57	.64	.74	.66	.87	.64	.76	.59
Total (N=1035)	Mean	.04	.03	.02	4.75	.02	.03	.01	.01	.01	-.01	.01	-.01
	S.D.	.97	.96	.96	1.43	.60	.72	.79	.62	.87	.81	.78	.65
F ratios (2,1031 df) (between clusters)		422.02*	38.77*	87.11*	121.92*	124.66*	63.90*	101.39*	58.50*	134.96*	167.00*	110.97*	33.15*

* p <.001

sample means and standard deviations for the various factors represented in this table differ slightly from the mean of 0 and standard deviation of 1 originally produced after orthogonal rotations.) Descriptions of the three cluster profiles follow:

Cluster one. Children in this cluster scored low on prior achievement and other cognitive skills (creativity, inquiry skill, and writing quality). They were relatively lacking in self-confidence, and tended not to value interpersonal equality or to be concerned about the welfare of others. They did not believe that they exerted much effective environmental control, had little intrinsic motivation, and expressed a value on compliance. They were, however, moderate with respect to autonomy, self-direction, and achievement motivation. These children feel themselves to be lacking in power. They have relatively little confidence in themselves, their ability to influence their environment, and the value of their own interests (thus the low intrinsic motivation). Their high score on compliance seems a reasonable corollary to this; because they feel that their own efforts lack efficacy and value they wish to be more guided by conforming to the directives of authorities. Their poor academic performance may be both cause and effect of this composite. They may feel relatively powerless, etc. because they do relatively poorly in school (and get persistent negative feedback as a result); at the same time, they may perform poorly academically because they lack the necessary internal motivation and self-confidence. Focusing on the most salient aspects, we consider this cluster to represent children who are low prior achievers who value compliance, lack self-confidence and intrinsic motivation, and feel powerless.

Cluster two. In most respects, this cluster is diametrically opposed to cluster one. Most of the components which had low mean scores for the children in cluster one have high mean scores for those in cluster two. The cluster two children scored high on prior achievement and the other cognitive skill measures; they also obtained high scores on self-confidence, concern for others, personal control/intrinsic motivation and achievement motivation. At the same time, their scores were low for both value on task self-direction and preference for class with autonomy (and personal expression), and moderate for value on equality and compliant, conforming orientation. These are children who perform quite well in school, and like a relatively clearly structured, teacher controlled, classroom setting. They are also strongly internally motivated, and feel self-confident and in control of themselves and their environment. They apparently accept the school's academic objectives, work successfully toward achieving them, and do not wish to set their own goals or directions. For a brief description, these children can be considered self-confident, motivated prior achievers who value structure and direction.

Cluster three. Children in this cluster stated strong preferences for classrooms which provided students with much autonomy and with the opportunity for personal expressiveness. They also valued self-direction in task activities and interpersonal equality; they tended to be non-compliant, and scored low on achievement motivation. With respect to the various cognitive skills and self-confidence, the children in the third cluster obtained moderate scores (although for achievement test performance and inquiry skill they were substantially above the total sample mean, while not as high as the cluster two children). These children appear to feel the need to be independent, autonomous, self-directing and self-expressive, and to reject external authority and direction. The fact that their scores for achievement motivation and intrinsic motivation are relatively low indicates that their desire for self-direction does not incline them particularly toward task accomplishment (even though their school performance is moderate-to-good). To summarize, we consider this cluster to contain children who value autonomy, self-direction, and the opportunity for self-expression.

Although there has been much more prior research applying cluster analytic techniques to the grouping of persons than to the grouping of situations, there has been little which is directly relevant or comparable to this cluster analysis of children. The development of typologies of persons has long been a characteristic operation of personality theorists; while most of these typologies have not been subjected to validation by cluster analysis, there have been studies which clustered psychiatric patients by symptoms into groupings which closely resembled certain standard "syndromes" (see Overall and Klett, 1972).

Gordon (1975) reported results of cluster analyses of four different sets of scales representing value orientations and personality characteristics obtained from several different samples of adults. Four clusters emerged which were general and comparable across scales and samples. The first, "control of others" or "enterprising" may be comparable in part to our cluster two; the second, "service to others" or "social" does not seem clearly represented by any of the present clusters, although the most relevant components (such as "concern for others") also obtained their highest mean scores in cluster two. Both the third and the fourth clusters identified by Gordon, called respectively "self-determination" and "institutional restraint vs. self-expression" seem contained in the present cluster three.

We are aware of only two prior studies which cluster-analyzed children in educational situations. Cunningham (1975), in the same study mentioned earlier, also clustered children and found four clusters. The first of his clusters contained high achieving, competent and advantaged children, similar to our cluster two. The second of his clusters had moderately high achievers who were also extroverted and cooperative; this also seems most closely related to several of the components of our second cluster. The last two Cunningham clusters included children who were low achievers, one combining it with "introversion," the other with alienation and disruptiveness; these both would relate most closely with the present cluster one. Finally, in a secondary analysis of data from our own pilot study (Solomon and Kendall, in press), a cluster analysis of four preference/orientation factors plus prior achievement produced six clusters of children. The first of these combined high prior achievement with internal motivation, resembling the present cluster two. Another combined a "preference for open situations" with moderate achievement, similar to the present cluster three. None of the clusters in the earlier study duplicated the present cluster one very closely, although three of them showed some similar elements (one combined low achievement and low motivation with moderate compliance, another combined low achievement and high motivation with moderate compliance, and the third combined high compliance with moderate achievement and motivation). A final cluster in the pilot study does not clearly resemble any of those in the present one, although it probably comes closest to the present cluster two, since it combines fairly high achievement and "personal control orientation" with a preference for structured situations.

Although certain similar elements appear to run through all of these studies, it is obvious that much further research needs to be done before a clear, validated, and replicable set of child types with relevance to educational situations is definitively established. As with the classroom clusters, however, the present set of child clusters seem to represent recognizable types, and lead to fairly clear expectations about how well (relatively) each "type" of child should perform in each "type" of classroom setting. The next section will show how well such expectations are borne out.

Effects of Classroom "Types" and Child "Types" on Outcomes

Because both sets of clusters (child and classroom) represented discrete, qualitative categories, analysis of variance seemed an appropriate and logical method for investigating their separate and joint effects on the various outcome measures. Selecting the appropriate unit of analysis to use with this procedure presented something of a problem, however. Typically, the individual student would constitute the unit of analysis; this would clearly be appropriate in an experiment in which each subject received a "treatment" independently of other subjects. But when the students are organized into ongoing groups (or classrooms), the treatment (or educational experience) of one student cannot be considered to be independent of that of any of the others in the same classroom. Treating the student as the unit of analysis would clearly overestimate any classroom variable main effects, as well as any interactions involving classrooms. Yet, the investigation of child by classroom interactions is a major objective of this research, and means to study such interactions without considering the individual child as the unit of analysis were not readily apparent.

The solution to this problem which we adopted was suggested in a recent article by Page (1975); a very similar procedure was advocated and used in research by Walberg, Sorenson, and Fischbach (1972). The essentials of this solution, as stated by Page, were:

> "Treat each .. classroom .. as if it were a single subject. Then treat the interesting subcategories within the classroom as if they represented repeated measurements of the same subject, made under different pseudo-conditions." (P. 342).

This implies the use of a "repeated measures" analysis of variance procedure, which divides the sources of variance (including error terms) into two general classes: "between subjects" variance and "within subjects" variance (or, in this application, "between classrooms" and "within classrooms" variance). With respect to a given dependent variable, each classroom would then be represented by a single score (most likely a mean) for each of the within-classroom "subcategories."

In the present instance, the child variables which were to be reconstituted into within-classroom "subcategories" included child cluster membership and sex of child. Therefore, for each dependent (outcome) variable a mean score was derived, within each class, for each child cluster by sex grouping; this produced six "repeated measure" scores within each class. The analysis of variance then included classroom cluster as a nonrepeated independent variable (with six levels), and sex and child cluster as repeated measure independent variables (with two and three levels, respectively). Each classroom, with its "repeated" subcategories, constituted a "replicate" within its classroom cluster. Each cell entry was a subcategory score within a single classroom. These entries were combined across the classrooms in a given cluster to compose a "cell." Because some of the classrooms had few children, it was inevitable that all six of the child "subcategories" would not be represented within some of the individual classrooms. In fact, 8.67% of the 300 possible cell entries (6 subcategories within 50 classrooms) were missing; these missing entries were represented by total sample means. The missing entries were distributed so that there were no empty cells however; each of the sex by child cluster subcategories was represented in all or nearly all of the classrooms within each classroom cluster.

Tables 20 and 21 show how equally the children were distributed by sex between the different child clusters and classroom clusters (considered separately), before the data were regrouped according to subcategory means within classrooms. The child clusters were differently distributed for the two sexes. Girls were over-represented in cluster two, and boys were over-represented in clusters one and three. The distributions between the classroom clusters, however, were fairly equal for the two sexes, as shown in Table 21. Similar distributions were also obtained for the child cluster by classroom cluster combinations. Tables 22, 23, and 24 show these for boys,

Table 20

Distribution of Children by Sex within Child Clusters

Sex	Child Cluster			χ^2 value
	One	Two	Three	
Boys	209	184	117	32.30* (2 df)
Girls	174	278	73	

total N = 1035

* $p < .01$*

Table 21

Distribution of Children by Sex within Classroom Clusters

Sex	Classroom Cluster						χ^2 value
	One	Two	Three	Four	Five	Six	
Boys	84	102	109	77	50	88	.80 (5 df)
Girls	90	110	103	82	54	86	

total N = 1035

girls, and the total sample. While the distribution for boys did not deviate significantly from chance (as indicated by the chi-square value shown in Table 22), the distributions for girls and the total sample did (Tables 23 and 24).

The analysis of variance method which was used assigned a single value for each classroom on each child cluster by sex subcategory, for each dependent variable. The distribution discrepancies shown in the preceding tables were eliminated with this procedure; all classes were given equal weights with respect to these subcategories. The only remaining discrepancies were those associated with the classroom clusters

Table 22

Distribution of Boys in Child Cluster by Class Cluster Combinations

Child Cluster	Classroom Cluster						χ^2 value
	One	Two	Three	Four	Five	Six	
One	30	45	45	31	16	42	
Two	30	41	38	29	20	26	8.75 (10 df)
Three	24	16	26	17	14	20	

total N = 510

Table 23

Distribution of Girls in Child Cluster by Class Cluster Combinations

Child Cluster	Classroom Cluster						χ^2 value
	One	Two	Three	Four	Five	Six	
One	28	31	42	24	18	31	
Two	54	71	45	43	28	37	19.78* (10 df)
Three	8	8	16	15	8	18	

* $p < .05$

total N = 525

Table 24

Distribution of All Children in Child Cluster by Class Cluster Combinations

Child Cluster	Classroom Cluster						χ^2 value
	One	Two	Three	Four	Five	Six	
One	58	76	87	55	34	73	
Two	84	112	83	72	48	63	19.36* (10 df)
Three	32	24	42	32	22	38	

total N = 1035

* $p < .05$

(the "nonrepeated" independent variable), which ranged in size from six to ten. The repeated measures analysis of variance procedure which was used was taken from Winer (1971), and used "unweighted means" to handle the unequal classroom cluster frequencies.

A very large number of analyses of variance were computed for this research. Some are reported and discussed in this section; others in later sections. Because of this number, it will not be possible to present complete analysis of variance tables. Tables summarizing these analyses, themselves limited to the presentation of F values and probability levels for the various effects, are presented in Appendix A. Tables presenting selected F values, means, and t values for differences between means will be presented in the body of the report.

Most of these analyses of variance were concerned with 14 outcome measures. For those which included both pre- and post-measures, residual scores were obtained with a regression analysis. These residuals constituted the deviation of each actual post-test score, for each individual, from that predicted on the basis of the parallel pre-test score. The residuals were essentially measures of "gain;" children with positive scores had gained more than "expected," while those with negative scores had gained less than "expected." They were calculated for the measures of achievement test performance, creativity, inquiry skill, writing quality, the four attitude and value factors (self-confidence, value on equality, concern for others, and value on self-direction), and the single scale which represented "self-esteem." (Although self-esteem had contributed to the "self-confidence" factor, it was decided also to include it as a separate variable because of its general interest and because it did not seem well-represented by that factor, its contribution to it having been relatively weak.) Two other sets of factors had been derived from measures obtained only in the spring--the students' self- and class-evaluations (with three factors: enjoyment of class, social involvement, and perceived class disruptiveness) and the teachers' ratings of students (with two factors: perseverance, social maturity, and activity/curiosity); these were used as outcome measures directly.

A summary of the analyses of variance of each of these fourteen outcome measures, with classroom cluster, child cluster, and sex as independent variables, is presented in Table 63, Appendix A. In the remaining pages in this section, we will present more detailed tables for all main effects and for those interactions which reached significance at the .10 level or better. Because this research had exploratory and heuristic objectives, the .10 probability level was considered appropriate. It was felt, furthermore, that our aggregating procedure, which reduced the number of "cases" from 1,035 (and 1,292 in some instances) to 50, may have been to some degree an overcompensation (particularly with respect to interactions), and thus justified a relatively unconservative probability level.

Cluster and Sex Main Effects

Tables 25, 26, and 27 present the main effects for the classroom clusters, child clusters, and sex, respectively. Because the two sets of clusters encompass virtually all of the available information describing classrooms and children (as they were at the outset of the school year) and inasmuch as each set's effects are relatively independent of those of the other two (except as they are involved in interactions), these main effects can be considered "best estimates." Although the possibility of adding the measure of socioeconomic status as a covariate in these analyses was considered, it was rejected on the grounds that because socioeconomic status was correlated with prior achievement and several of the other variables which helped comprise the child clusters (see Table 62, Appendix A), partialling it out would be, in effect, partialling out some of the effect which we wished to investigate. (Socioeconomic status was, however, also included as a separate independent variable, and its interactions with classroom clusters and classroom dimensions investigated; these findings are presented in later sections).

Table 25 presents the classroom cluster main effect means for all dependent variables. Three of these show significant effects: achievement test performance, perceived class disruptiveness, and activity/curiosity. In addition, the effect for creativity can be considered to be of borderline significance; it slightly misses an acceptable level of significance in the present analysis, but in several subsequent analyses which also investigated classroom cluster main effects (shown in Table 65) creativity did show significant effects. This suggests to us that the effect on creativity is not a very strong one but is sufficiently clearly indicated to be worthy of notice.

The effect on achievement test performance shows high residual scores for clusters two and four, low scores for cluster one, and intermediate scores for the other classroom clusters. Clusters two and four were both characterized as being relatively tightly controlled and orderly and as having a disciplined approach to tasks (see Table 18). Cluster four combined this with warmth while cluster two combined it with a fairly cold and business-like approach, but it appears likely that it is the orderly, disciplined element in common which is important for developing the skills necessary for good achievement test performance. The classroom cluster which shows the lowest achievement test scores in the present results, cluster one, was characterized by extremely low scores on the same component; classrooms in this cluster were permissive, undisciplined, and lacking in control. This finding can be compared with our pilot study results, which found better achievement test performance for children in "traditional" than in "open" classes (where the traditional were observed to be more controlled and more oriented to academic task performance than were the open classes). Similar results were also obtained in some (but not all) of the relevant prior studies cited earlier.

The highest residual scores for creativity were obtained by class cluster five, the grouping which combined great warmth and friendliness with a strong emphasis on student expressiveness, exploration and creativity. It seems altogether reasonable

Table 25

Means for Classroom Cluster Main Effects on all Dependent Variables

Dependent Variable	Classroom Cluster						$F(5,44)$	Between-Mean Difference Required for Significance ($p < .05$)
	One	Two	Three	Four	Five	Six		
Achievement Test Performance	-.16	.11	-.02	.09	.02	-.02	2.52*	.19
Creativity	-.17	.13	-.10	.13	.27	-.09	1.64	
Inquiry Skill	-.08	-.06	-.09	.10	-.12	.01	.53	
Writing Quality	-.34	.07	.22	.40	-.04	.01	1.50	
Self-Esteem	-.27	-.26	-.62	.28	.16	.04	.37	
Self-Confidence	-.03	.04	-.03	.01	-.01	.04	.23	
Value on Equality	-.04	.05	.05	.03	.05	.07	.39	
Concern for Others	.05	.01	-.10	-.06	.06	.03	1.20	
Value on Self-Direction	.14	-.01	-.02	-.01	.00	.06	.90	
Enjoyment of Class	-.08	-.16	-.06	-.12	.02	.05	.45	
Social Involvement	.02	.07	-.10	.03	-.03	-.05	.32	
Perceived Class Disruptiveness	-.01	-.06	.23	-.05	-.18	.07	2.51*	.27
Perseverance, Social Maturity	.04	-.06	-.17	.15	.13	-.08	.93	
Activity, Curiosity	.17	-.08	.05	-.26	.19	.07	2.53*	.33

* $p < .05$

that children in such classes would perform well with respect to creativity. (This finding is also consistent with some of the prior research.) It is interesting to note, however, that the classroom clusters characterized by control and orderliness (two and four) also did relatively well with respect to creativity, while the extremely permissive and uncontrolled one (cluster one) did quite poorly. The extreme lack of control and discipline was apparently harmful to creativity as well as academic achievement.

Two classroom clusters demonstrated high scores on the teachers' rating factor, "activity, curiosity:" cluster one, the extremely permissive and varied cluster, and cluster five, the warm and expressive cluster. Children in the first of these clusters were presumably active and curious because they were given a good bit of autonomy and independence with few restrictions; those in the second were perhaps so as a result of the teacher's active promotion of student exploration, within a warm and friendly context.

The other significant class cluster main effect, on "perceived class disruptiveness," showed high scores for the coldest and most unfriendly cluster (three), and lowest scores for the warmest and friendliest one (five). This is not surprising; in fact it should probably be considered to be little more than validity information about the classroom cluster designations. Unfriendly and hostile classes are seen as containing disruptive children, while warm and friendly classes are seen as relatively devoid of them.

Child cluster main effects are presented in Table 26. Ten of the fourteen dependent variables were significantly influenced by the child clusters. In general, these differences slightly favored cluster two, the cluster characterized by high prior achievement, self-confidence, personal control, etc. There were, however, several dependent variables for which child cluster three (characterized by student autonomy, self-direction, independence, etc.) achieved scores not significantly lower than cluster two--this occurred for creativity, writing quality, value on equality, concern for others, and activity/curiosity. Cluster three children scored highest with respect to residual "value on self-direction." Children in cluster one (compliant low achievers) achieved the lowest scores on all dependent variables showing significant child-cluster effects, except for enjoyment of class, which was lowest for cluster three.

Table 26

Means for Child Cluster Main Effects on All Dependent Variables

Dependent Variable	Person Cluster			Between-Cluster *t* Values			*F* (2,88)
	One	Two	Three	1 vs 2	1 vs 3	2 vs 3	
Achievement Test Performance	.00	.03	-.02				.85
Creativity	-.14	.13	.09	1.75*	NS	NS	7.11***
Inquiry Skill	-.23	.15	-.03	2.58**	NS	NS	13.28***
Writing Quality	-.29	.24	.21	2.37**	2.23**	NS	14.16***
Self-Esteem	-.89	.55	.00	NS	NS	NS	3.33**
Self-Confidence	-.05	.04	.02				2.20
Value on Equality	-.10	.11	.10	2.00**	1.91**	NS	10.17***
Concern for Others	-.08	.06	.01	NS	NS	NS	3.39**
Value on Self-Direction	-.03	.01	.10	NS	NS	NS	3.56**
Enjoyment of Class	.03	.03	-.26	NS	1.89*	1.92*	9.66***
Social Involvement	.03	.01	-.07				1.20
Perceived Class Disruptiveness	.05	-.06	.00				2.20
Perseverance, Social Maturity	-.34	.37	-.02	4.41***	1.98**	2.43**	39.10***
Activity, Curiosity	-.28	.24	.11	4.05***	3.01***	NS	35.47***

* $p < .10$
** $p < .05$
*** $p < .01$

Note: *t* tests were not calculated if the *F* did not reach the .10 level of significance.

Sex main effects from these analyses are presented in Table 27. Ten of the dependent variables demonstrated significant sex effects, most of them favoring girls. Girls manifested higher scores on academic and cognitive skills and various social attitudes and values, while boys were more active and more likely to value self-direction. These differences are in accord with other findings which have been reported concerning differences among pre-adolescent boys and girls (cf.

Table 27

Means for Sex Main Effects on All Dependent Variables (Based on Class Means)

Dependent Variable	Sex		
	Boys	Girls	*F* (1,44)
Achievement Test Performance	-.03	.04	3.48*
Creativity	-.04	.09	5.83***
Inquiry Skill	-.02	-.06	.39
Writing Quality	-.10	.21	7.22***
Self-Esteem	-.08	-.15	.04
Self-Confidence	-.04	.05	4.22**
Value on Equality	-.06	.13	13.41***
Concern for Others	-.08	.08	12.32***
Value on Self-Direction	.06	-.01	2.78*
Enjoyment of Class	-.24	.11	26.10***
Social Involvement	-.02	.0[illegible]	.13
Perceived Class Disruptiveness	-.04	.04	1.87
Perseverance, Social Maturity	-.17	.17	22.73***
Activity, Curiosity	.23	-.18	33.70***

* *p* <.10
** *p* <.05
*** *p* <.01

Maccoby, 1966). Parallel findings in the form of correlations, from analyses in which the individual child constituted the unit of analysis, can be seen in Table 62, Appendix A. The findings from the two analyses are generally similar.

Interactions

The next set of tables presents means and significance levels for the various two- and three-way interactions which manifested significant effects (*p* <.10 or better) for the analyses which included classroom cluster and child cluster as independent variables. Table 28 shows means for two significant sex by classroom cluster interactions, one affecting "activity/curiosity," the other, "self-esteem."

Table 28

Means for Significant 2-Way Interactions Between Sex and Classroom Clusters

Dependent Variable	Sex	Classroom Clusters One	Two	Three	Four	Five	Six	F (5,44)	Between-Mean Difference Required For Significance ($p < .05$)
Activity, Curiosity	Boys	.26	.25	.00	.04	.52	.28	3.17**	.42
	Girls	.08	-.40	.09	-.56	-.14	-.14		
Self-Esteem	Boys	.04	.25	.21	.47	-.67	-.76	2.30*	1.72
	Girls	-.59	-.78	-1.46	.09	1.00	.34		

* $p < .10$
** $p < .05$

Table 29

Means for Significant 2-Way Interactions Between Sex and Child Clusters

Dependent Variable	Sex	Person Clusters One	Two	Three	Between-cluster t values 1 vs 2	1 vs 3	2 vs 3	F (2,88)
Social Involvement	Boys	-.06	-.07	.05	NS	NS	NS	5.91***
	Girls	.13	.09	-.20	NS	3.25***	2.87***	
Between-sex t values		1.81*	NS	2.52**				

* $p < .10$
** $p < .05$
*** $p < .01$

Although boys' activity levels were generally higher than those of girls (as seen in the main effect discussed above), the two sexes show different patterns regarding the type of class in which this characteristic was maximized. Boys were rated as most active and curious in class cluster five, the type of class in which curiosity and exploration are actively promoted by the teacher; girls, on the other hand, tended to be most active in the relatively permissive and uncontrolled classes represented by clusters one and three. The results with self-esteem were somewhat different. Boys' self-esteem showed greatest residual gains in class cluster four (warm, controlled and orderly), while for girls the gains were greatest in clusters five (warm and expressive) and six (academically oriented, individualized teacher-student interaction). To the degree that one can generalize from these results, it appears that boys' self-esteem is most enhanced in a warm, but business-like and task-oriented setting, while girls' self-esteem is enhanced in settings with more personalized teacher-student relationships.

One significant sex by child-cluster interaction was found with these analyses; it is presented in Table 29. The cluster three (autonomous, noncompliant, self-directing) boys were most socially involved with their classmates, while girls in this cluster were least socially involved.

Two of the dependent variables, activity/curiosity and residual creativity, were influenced by two-way interactions between classroom cluster and child cluster, shown in Table 30. Both the low achieving, compliant (cluster one) and the autonomous, self-directing (cluster three) children were most active and curious in the most permissive, least controlled class type (represented by cluster one), while the high achieving, motivated children were most active and curious in the classes which emphasized expressiveness and exploration and were warm and friendly (cluster five). Thus the children who stated a preference for autonomy and self-direction were rated as highly active and curious in classes which provided for

Table 30

Means for Significant 2-Way Interactions Between Child Clusters and Classroom Clusters

Dependent Variable	Child Cluster	Classroom Cluster						$\underline{F}$ (10,88)	Between-Mean Difference Required For Significance ($p < .05$)
		One	Two	Three	Four	Five	Six		
Creativity	One	.00	-.11	-.26	-.29	.11	-.30	2.21*	.30
	Two	-.12	.10	.08	.29	.43	.01		
	Three	-.39	.39	-.14	.39	.26	.04		
Activity, Curiosity	One	.03	-.43	-.16	-.67	-.31	-.14	2.80*	.25
	Two	.11	.24	.14	.14	.66	.15		
	Three	.38	-.05	.16	-.26	.21	.19		

*$\underline{p} < .05$

much student autonomy, while the children who were achievement oriented and moderately compliant showed most activity and curiosity in the classes which actively promoted curiosity. All three types of children scored high on creativity in the warm and expressive classes (cluster five), but children in clusters two and three also did well in class cluster four (warm, controlled, orderly), and cluster three children (those preferring autonomy) did well in class cluster two (which combined control and orderliness with student initiation of varied activities). This provides some evidence that children who like self-direction are benefited in some respects by a class setting which allows them to initiate their own tasks, and that an orderly, disciplined approach to tasks can help promote creativity as well as academic achievement even for those whose stated preference is for autonomy (but not, apparently, for the children with the lowest levels of prior achievement).

Five dependent variables were influenced by three-way interactions (child-cluster by sex by class-cluster); self-esteem, self-confidence, value on equality, concern for others, and perseverance/social maturity. The means from these interactions are shown in Table 31. Children of both sexes in the low achieving, compliant cluster (cluster one) showed the greatest residual self-esteem in warm and friendly classroom environments; boys in classes which combined this warmth with control and orderliness (cluster four), and girls in those which combined it with an emphasis on student expressiveness (cluster five). Girls in child cluster one also obtained relatively high self-esteem residual scores in class cluster six, involving the most individualized teacher-student interaction. Children in the second child-cluster (personally controlled, high prior achievers, etc.) also showed different self-esteem effects for the two sexes: the boys did best in class clusters five and two (one warm and expressive, the other both controlled and self-initiating), while the girls did best in clusters four and six (warm and controlled, and individualized). The autonomous, expressive (cluster three) girls showed greatest self-esteem in the warm and expressive classrooms (cluster five), while the boys in this cluster showed it in class cluster four (warm, controlled, orderly). The results for self-confidence were generally similar, as would be expected. The only clear differences occurred for the cluster three children (autonomous, etc.); boys of this type showed greatest residual self-confidence in class cluster one (permissive, providing for autonomy, etc.), while girls did so in class cluster two (combining orderliness with student initiation of tasks).

Cluster one (low achieving, compliant, etc.) children of both sexes achieved the highest residuals for value on equality in class cluster five (warm and expressive); cluster two (high achieving, etc.) boys scored highest in class cluster four (warm, controlled, orderly), while cluster two girls did so in cluster six (involving individualized teacher-student interaction); autonomous, expressive (cluster three) boys scored highest in class cluster six (individualized, etc.), while cluster three girls did so in class cluster three (involving a relatively high level of permissiveness, among other things).

Table 31

Means for Significant 3-Way Interactions Between Child Clusters, Sex of Child, and Classroom Clusters

Dependent Variable	Sex, Child Cluster	Classroom Cluster						F (10,88)	Between-Mean Difference Required For Significance ($p < .05$)
		One	Two	Three	Four	Five	Six		
Self-Esteem	Boys								
	One	.10	-1.51	-.23	.59	-1.48	-1.59	1.75*	1.27
	Two	-.05	1.25	-.28	-.48	1.96	-.15		
	Three	.08	1.02	1.14	1.30	-2.50	-.53		
	Girls								
	One	-.88	-3.08	-1.14	-2.41	.55	.40		
	Two	.80	.72	-.17	1.55	.56	.85		
	Three	-1.70	.02	-3.07	1.14	1.89	1.26		
Self-Confidence	Boys								
	One	-.14	-.18	-.14	.07	.04	-.07	1.78*	.14
	Two	-.04	.00	-.01	-.16	.04	-.02		
	Three	.13	.00	.08	.02	-.29	-.06		
	Girls								
	One	-.10	-.03	.07	-.15	-.03	.09		
	Two	.14	.13	.05	.15	.04	.19		
	Three	-.17	.30	-.22	.11	.16	.14		
Value on Equality	Boys								
	One	-.22	-.31	-.06	-.19	-.04	-.37	2.47**	.15
	Two	-.19	.17	.12	.22	-.16	-.05		
	Three	.09	.03	-.18	-.32	.05	.40		
	Girls								
	One	-.17	.07	.00	-.04	.18	-.10		
	Two	.20	.21	.04	.23	.25	.29		
	Three	.06	.12	.41	.31	.03	.22		

Table 31 (continued)

Means for Significant 3-Way Interactions Between Child Clusters, Sex of Child, and Classroom Clusters

Dependent Variable	Sex, Child Cluster	Classroom Cluster						F (10,88)	Between-Mean Difference Required For Significance ($p < .05$)
		One	Two	Three	Four	Five	Six		
Concern for Others	**Boys**								
	One	-.14	-.13	-.17	-.29	.02	-.11	1.93*	.14
	Two	-.19	.09	-.14	.10	-.04	-.01		
	Three	.21	-.25	-.53	-.30	.22	.22		
	Girls								
	One	.20	.01	-.09	-.27	.00	-.01		
	Two	.04	.27	.14	.22	.17	.13		
	Three	.18	.07	.19	.21	.01	-.05		
Perseverance, Social Maturity	**Boys**								
	One	-.56	-.61	-.51	-.65	-.01	-.74	1.83*	.20
	Two	.07	.25	-.11	.27	.13	.39		
	Three	-.01	-.16	-.58	.14	-.01	-.31		
	Girls								
	One	-.06	-.13	-.30	.12	-.43	-.25		
	Two	.65	.56	.46	.68	.70	.43		
	Three	.14	-.25	.06	.31	.42	-.02		

* $p < .10$

** $p < .05$

Boys in child cluster one achieved their highest concern for others scores in class cluster five (warm and expressive), while girls in this child cluster scored highest in class cluster one (extremely permissive, etc.). Cluster two boys and girls alike scored highest in class clusters two and four (both relatively controlled and orderly). Cluster three boys obtained high scores on concern for others in class clusters one, five and six (respectively, permissive, expressive and individualized), while girls in this cluster did so in clusters one, three and four (the first two relatively permissive, the other, warm and orderly).

Low achieving, compliant (cluster one) boys were rated high on "perseverance, social maturity" in class cluster five (warm and expressive), while girls of this type persevered most in class cluster four (warm, controlled, orderly). High achieving, motivated (cluster two) boys persevered most in class cluster six (characterized by individualized teacher-student interaction); girls in this child cluster were rated as persevering in just about every type of class, with highest scores for clusters one (permissive), four (warm and controlled) and five (warm and expressive). Autonomous, expressive (cluster three) boys scored highest on perseverance in class cluster four (warm and orderly), while girls in this cluster did so in clusters four and five (warm and expressive).

Summary of Interactions Involving Child Clusters and Classroom Clusters

Although there were some differences between the results for the different dependent variables in the three-way interactions just discussed, the major trends can be summarized as follows: On the whole, the low achieving, compliant (cluster one) boys did best in warm and expressive classes with moderate control (class cluster five); the motivated, high achieving boys (cluster two) did best in classes which were controlled and orderly but also allowed for student initiative and varied activities (cluster two); and the boys who valued autonomy and personal expression (cluster three) did best in classes which were permissive, and provided for much autonomy and student initiation of activities (class cluster one). At the same time, the cluster one (low achieving, etc.) girls performed well in both the warm, expressive (cluster five) and the individualized (cluster six) classes; the cluster two (high achieving, motivated) girls did best in cluster four classrooms (combining warmth with control and orderliness), and the cluster three (autonomous expressive orientation, etc.) girls did best in class cluster five (combining warmth with an emphasis on student expressiveness).

The major differences between the sexes in these interactions were: 1) low achieving, compliant girls did relatively well in classes which provided for individualized teacher-student interaction, in addition to the warm, expressive classes favored by both sexes in this child cluster; 2) the motivated, high achieving children of both sexes did well in classes which were controlled and orderly; however boys did best in classes which combined this orderliness with student-initiated activities, girls in those which combined it with warmth and friendliness; 3) the boys who were oriented toward autonomy and personal expression did best in the classes which provided for much student autonomy, while the girls so-oriented did best in classes which emphasized greater student expressiveness.

Concerning the effects which held across the sexes, the low achieving, etc. (cluster one) children scored highest on both activity/curiosity and creativity in the most permissive (cluster one) classrooms; the cognitively proficient, motivated (cluster two) children did well on both these variables in warm and expressive (cluster five) classrooms, and on creativity also in cluster four (warm and controlled); and the autonomy-preferring (cluster three) children were most active and curious in permissive (cluster one) classrooms, but most creative in clusters two and four (both characterized by relatively high levels of control and orderliness, among other things).

The interactions involving sex seem to show girls doing somewhat better in classes which allow for more personalized relationships and expressiveness, boys in those which allowed for more autonomy. More generally, the class types which appeared to be the most beneficial for the children with low initial levels of cognitive skill and motivation (in child cluster one) were those characterized by great permissiveness and variety of activities (class cluster one) and by the combination of warmth and a strong emphasis on student expressiveness (cluster five). It may be suggested that these classroom environments, encouraging the child's development of self-direction and self-expression, may have helped the child to develop (or discover) motivation for task performance which may initially have been lacking. The cluster two children (well-motivated, with initially high levels of cognitive skill), on the other hand, did generally best in class clusters two and four, both characterized by high levels of control and orderliness and relatively high levels of student initiation of activities. They also did relatively well in class cluster five, particularly with respect to activity/curiosity and creativity; this, of course, was the cluster in which student expression and exploration were strongly emphasized, and which produced generally high creativity scores for all types of children. The importance of controlled and orderly classes to the performance of the most proficient and motivated children was not anticipated. But, to build on the explanation presented for the cluster one children, it would seem that these children would not require external stimulation and varied opportunities to motivate them, being well-motivated to begin with. A controlled and orderly task orientation (within a context which also allows them the opportunity to initiate their own tasks) may be what they require to help them develop further from an already high level of proficiency. Furthermore, a preference for structured classrooms was one of the components making up this cluster; these children are therefore performing well in the types of class which they prefer (and they may prefer them, of course, because they help them progress with tasks efficiently).

The pattern of results obtained for the autonomy-preferring, expressive, non-compliant, etc. children (cluster three) was somewhat more varied. Perhaps the most interesting aspect is that evident in the two-way interactions, showing children's activity and curiosity to be maximized in the most permissive classrooms (cluster one), but creativity to be maximized in clusters two and four (both characterized by high levels of control and orderliness). It is possible that permissive classrooms can increase the activity level and expressed curiosity of children oriented toward autonomy because the environment allows (and perhaps welcomes) what the children are inclined to do. But the development of a specific cognitive skill (such as creativity) may require that the children's expressive and autonomous inclinations be tempered somewhat. A relatively structured setting, with an orderly approach to tasks, may provide these children with a framework which they lack and may thereby help them to develop their expressive motives in productive directions.

Effects of Classroom "Dimensions" and Child "Dimensions" on Outcomes

In addition to the analyses of the main effects and interactions of the child and classroom "types" represented by clusters and presented in the preceding section, parallel analyses were also done with the individual components of the clusters, generally factor scores. The major concern was again with child by classroom interactions; therefore a number of analyses were performed, each investigating the interaction of one child dimension with one classroom dimension. The classroom dimensions included in these analyses were the six classroom factor scores; the child dimensions were the four orientation/motive factor scores, plus socioeconomic status. The same fourteen dependent variables used in the preceding analyses were also used in these (including residual scores for all measures which had had pre- and post- administrations). The same repeated measures analysis of variance procedure which was used to investigate the cluster main effects and interactions, with the classroom as the unit of analysis, was also used for these analyses. In order to do this, it was necessary to "block" the independent variables into categorical groupings, since they represented continuous measures. This was done before the data were aggregated into within-class subgroup means. Each of the child and classroom independent variables was trichotomized into approximately equal thirds, according to the distributions obtained for the total sample. Each classroom measure was blocked so that the low, medium, and high groups contained, respectively, 17, 16, and 17 classrooms.

Classroom and Child Dimension Main Effects

We discussed earlier reasons for selecting the repeated measures approach as a means for investigating interactions while still using the classroom as the unit of analysis. With the analyses using clusters, this also provided a reasonable means for investigating the main effects as well. However, we did not consider the analyses using blocked dimensions to give the "best estimates" of the main effects, because the blocking necessarily discarded some of the information contained in the data. This seemed unavoidable in the investigation of interactions, but not in the investigation of the main effects. We consider the best estimates of the effects of the child preference and orientation factors and SES to be the correlations with the outcome measures presented in Table 62, Appendix A. These indicate generally positive effects for "personal control, intrinsic motivation" (with significant correlations for residual achievement test performance, inquiry skill, writing quality, self-esteem, self-confidence, value on equality, concern for others, enjoyment of class, perseverance and activity level), and generally negative effects for "compliant, conforming orientation" (with significant correlations for creativity, inquiry skill, writing quality, value on equality, concern for others, value on self-direction, and activity level; but also a significant positive correlation with "enjoyment of class"). A few scattered significant correlations were also obtained with the other two orientation/motive factors, "preference for class with autonomy" and "achievement motivation" but they were nowhere near as pervasive as those for the two factors mentioned above. Socioeconomic status showed modest positive correlations with the measures of cognitive skills and some of the residual value and attitude measures (none of the correlations were above .13, however), and showed slightly higher positive correlations with the teacher rating factors. It also obtained significant correlations with the two orientation/motive factors which were related to the bulk of the outcome measures, compliant conforming orientation (a negative correlation) and personal control, intrinsic motivation (a positive one).

To determine the degree to which the factor-analytically derived classroom dimensions were independent of or related to modal aggregated individual attributes of the children in the classrooms, mean scores were derived for the four individual orientation/motive factors, and for socioeconomic status, within each classroom.

These mean scores were then correlated with the six obtained classroom dimensions. These correlations are shown in Table 32. They show classroom warmth to be correlated with the average level of student compliance, to girls' personal control, and to SES; control and orderliness fairly strongly (negatively) related to the average preference for class with autonomy; energetic encouragement of academic participation related to boys' achievement motivation; and emphasis on student expressiveness correlated with girls' personal control, and with SES (fairly weakly).

A multiple regression approach was used to obtain estimates of the classroom dimension main effects without altering the "continuous" character of these dimensions. Separate three-stage step-wise regression analyses were performed with each of the fourteen dependent variables. In each case, the classroom was the unit of analysis and the dependent variables were class means. In order to control for differences between classes in the average (or "composite") individual characteristics of the children within them, class mean scores on the four preference and orientation factors, and on SES, were entered as the first stage of the step-wise analysis. The six class factors were then entered, together, as the second stage. Finally, in order to investigate possible quadratic effects of these classroom factors (it was anticipated that moderate positions would be optimal in some instances), squared terms for each of the classroom factors were entered as the third stage in each of these analyses. These regression analyses were done separately for boys, girls, and for the total sample.

A summary of the regression analyses done with the cognitive outcome residuals and self-esteem is presented in Table 33. Each column represents a single regression analysis. The entries after each independent variable are the standard partial regression coefficients (beta weights), with the significance levels of their contributions to the dependent variables. At the bottom of each column is the multiple correlation and its square, which indicates the portion of the total

Table 32

Correlations Between Class Means on Individual Variables (Orientations and SES) and Second-Order Classroom Factor Scores

Individual Variables (Class means)		Second-Order Classroom Factors					
		Warmth, Friendliness, vs. Coldness	Control, Orderliness vs. Lack of Control	Commonality vs. Variety of Activities	Non-individualized vs. Indiv. Interaction	Energetic Encouragement of Acad. Participation	Emphasis on S Expressiveness
Preference for Class with Autonomy	Boys	.02	-.50***	-.09	-.05	-.08	.04
	Girls	.05	-.36***	.07	.04	-.14	.00
	Total	.02	-.52***	-.02	.02	-.12	.02
Compliant, Conforming Orientation	Boys	-.27*	-.07	-.01	-.05	.16	-.17
	Girls	-.19	-.02	-.03	.07	-.15	-.05
	Total	-.24*	-.02	-.03	-.02	.00	-.11
Personal Control, Intrinsic Mot.	Boys	-.06	.08	.08	.17	-.01	.10
	Girls	.24*	.04	-.19	.00	-.12	.30**
	Total	.17	.09	-.03	.08	-.08	.29**
Achievement Motivation	Boys	-.20	-.13	-.01	.09	.29**	-.04
	Girls	-.17	.01	-.06	-.13	.04	.09
	Total	-.19	-.08	-.05	-.03	.24*	.05
Socioeconomic Status	Boys	.29**	-.10	.01	.07	.08	.21
	Girls	.21	-.13	.02	.15	-.06	.21
	Total	.29**	-.14	.01	.13	.04	.24*

*$p < .10$

**$p < .05$

***$p < .01$

variance in that dependent variable accounted for by the combination of the independent variables.

The upper portion of this table (and the following two), representing the effects of the aggregated individual orientations and SES, are included only as controls; they show the influence of class averages (or "compositional" effects), but should not be considered in any way to represent individual level effects (which, as mentioned, are shown most clearly by the individual-level correlations presented in

Table 33

Regression Coefficients (Betas) and Multiple Regression Coefficients From Multiple Regression Analyses Showing Class-Level Main Effects on Cognitive Skills and Self-Esteem

Independent Variables	Dependent Variables (Residuals)														
	Achievement Test Performance			Creativity			Inquiry Skill			Writing Quality			Self-Esteem		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Aggregated Ind. Orients. and SES (Controls)															
Pref. for class w. autonomy	-.28	.07	-.08	-.35**	-.25*	-.38**	-.30*	.14	-.12	-.14	.12	.01	.18	.21	.22
Compliant, conforming orntn.	.00	-.17	-.07	-.34**	-.30	-.28*	-.38**	-.33	-.25	-.32*	-.02	-.21	-.12	-.03	-.14
Pers. contr., intr. mot.	-.01	.17	.00	-.01	-.28	-.22	-.07	.20	-.02	-.12	.04	-.34*	.04	.23	-.20
Achievement motivation	.07	-.31**	-.08	-.09	-.05	-.14	.19	.24	.26	.19	.00	.18	.42**	.05	.43**
SES	.15	-.27	.04	-.04	.15	.13	.15	-.15	.04	-.17	.33	.12	-.07	.14	.22
Class Factors (Linear Effects)															
Warmth	.23	.14	.21	.17	.30*	.19	.07	.13	.19	.39**	-.06	.26	.50**	.00	.44**
Control, orderliness	.35*	.53***	.54***	.30*	.26	.25*	.30	.28	.38*	.45**	.43**	.60***	.34	.09	.32*
Commonality	.28*	.00	.21	.11	-.01	.06	.29*	.23	.32*	.41**	-.07	.24	.20	.03	.18
Non-individualization	.16	.09	.11	-.13	-.02	-.10	-.30*	.01	-.15	-.06	-.22	-.15	.06	-.13	.01
Enc. of Acad. Participation	-.20	-.16	-.23*	-.28**	-.45***	-.41***	-.26*	-.01	.17	.02	-.01	-.09	.06	-.04	-.06
Emph. S. Expressiveness	-.06	-.18	-.11	.04	.09	.12	.11	.07	.14	-.01	-.17	-.02	.20	.06	.25
Squared Class Factors (Quadratic Effects)															
Warmth, sq.	-.01	.12	-.02	-.11	-.09	-.16	-.33	-.09	-.24	.08	-.06	-.03	.15	-.17	.01
Control, sq.	.01	-.24*	-.11	.09	.01	.02	.13	-.11	.07	.45**	.30	.45**	.16	.19	.24
Common, sq.	-.04	.24	.10	.14	.19	.17	.19	.13	.20	.19	-.05	.14	-.06	-.23	-.17
Nonind., sq.	.11	.28**	.19	.33**	.21	.26*	.09	.20	.16	-.01	.19	.09	.00	.02	-.07
Partic., sq.	-.09	-.01	-.09	.01	.17	.09	-.11	-.35**	-.33*	-.04	.03	-.01	-.38**	.04	-.30*
Express, sq.	-.13	-.49***	-.26*	.00	-.05	-.02	.16	.16	.20	.22	.27	.30*	-.01	.28	.27
Mult. R	.77	.83	.80	.79	.73	.80	.74	.67	.68	.68	.59	.66	.62	.53	.69
Mult. R^2	.59	.68	.64	.62	.54	.64	.55	.44	.47	.46	.35	.44	.38	.28	.48

Note: Positive signs for betas of squared terms indicate higher outcome scores for the high and low extremes than for the middle range of the independent variable; negative signs indicate higher outcome scores for the middle range than for the extremes.

$^{*}p < .10$; $^{**}p < .05$; $^{***}p < .01$

the appendix). These compositional effects are presented here primarily so that they may be discounted in considering the class dimension main effects, in the bottom portions of the tables.

Each of these classroom dimensions shows one or more significant relationships with the outcome measures presented in Table 33. Warmth is significantly positively related to creativity for girls, and to writing quality and self-esteem for boys. Control/orderliness shows strong positive linear relationships with achievement test performance and writing quality, and somewhat weaker but still significant relationships with the other outcome measures represented in this table as well (girls' self-esteem being the only exception). Control also demonstrates some quadratic effects; girls' achievement test performance was highest with moderate control, while boys' writing quality was enhanced at both extremes of control. These control effects, while not entirely expected, are generally consistent with the implications which seemed to emerge from the cluster results presented in the preceding section. It appears that various cognitive skills are enhanced in classrooms which provide for an orderly and disciplined approach to tasks.

Boys' achievement test performance, inquiry skill and writing quality were highest in classes with greatest commonality of activities, while this variable showed no significant effect for girls. Boys' inquiry skill was also highest in classes with the most individualized teacher-student interaction. There was, in addition, some indication that achievement and creativity were enhanced by both extremes of individualization.

Teachers' energetic encouragement of academic participation related clearly negatively to creativity residual scores, an unsurprising finding suggesting that the development of creativity may be inconsistent with a strong academic emphasis. However, the same independent variable also showed some weak negative relationships with achievement test performance and boys' inquiry skill, findings which are somewhat more difficult to explain. A moderate position on this variable related to maximal inquiry skill development (for girls) and maximal self-esteem (for boys). The major result which was expected for emphasis on student expressiveness, a positive relationship with creativity, was not found. In fact, the only relationships shown with this variable are quadratic ones: an inverted-U-shaped relationship with achievement test performance for girls, and a U-shaped one with writing quality.

Regression analyses relating the classroom factors to the four attitude and value factor residuals are presented in Table 34. Warmth was significantly related to girls' value on equality, both linearly and quadratically, and to value on self-direction (quadratically, with highest scores for the moderately warm classes). Control related negatively to value on self-direction, indicating that classes which provided for greater student autonomy and self-direction helped to develop values favoring such options on the part of the students. Control also showed a positive relationship with value on equality, and a quadratic (U-shaped) relationship with boys' self-confidence.

Commonality of class activities showed two significant effects; a positive one with boys' self-confidence, and a U-shaped one with concern for others. Classes characterized by individualized teacher-student interaction produced the greatest gains in boys' value on self-direction, although significant quadratic effects with the same independent variable indicated that boys' value on self-direction and self-confidence were maximal in classrooms at the upper and lower extremes of individualization.

Encouragement of academic participation showed two significant effects, both influencing value on equality residual scores; for girls there was a negative relationship, while for boys the scores were maximized in classrooms in the moderate range. Classrooms' emphasis on student expressiveness did not relate significantly to any of the value and attitude residual scores.

Table 34
Regression Coefficients (Betas) and Multiple Regression Coefficients From Multiple Regression Analyses Showing Class-Level Main Effects on Residual Attitudes and Values

Independent Variables	Dependent Variables (Residuals)											
	Self-Confidence			Value on Equality			Concern for Others			Value on Self-Direction		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Aggregated Ind. Orients. and SES (Controls)												
Pref. for class w. autonomy	-.13	.21	.15	.12	.14	.25	-.11	-.03	-.07	.17	.00	-.03
Compliant, conforming orntn.	-.37**	-.25	-.24	-.04	-.38*	-.18	-.33*	-.35*	-.53***	-.28*	-.39*	-.34*
Pers. contr., intr. mot.	.28	.19	.20	-.18	-.11	-.30	.03	.14	.15	.61***	-.09	.43**
Achievement motivation	.13	.22	.20	.30	.59***	.66***	.17	.54***	.42**	-.26	-.22	-.28
SES	-.18	.04	-.18	-.08	.03	.03	.22	-.14	-.23	-.07	.26	-.10
Class Factors (Linear Effects)												
Warmth	.18	.00	.23	.03	.29*	.19	.05	.17	.16	-.11	-.27	-.24
Control, orderliness	.15	.14	.25	.29	.24	.54**	.13	-.03	.13	-.23	-.21	-.40**
Commonality	.29*	.03	.25	.12	.06	.19	-.02	.08	.11	-.11	.05	.01
Non-individualization	-.14	.27	.16	.05	.21	.12	-.05	.18	.07	-.29*	-.07	-.18
Enc. of Acad. Participation	.01	.03	.02	-.12	-.26*	-.34**	-.15	-.10	-.16	.11	-.15	-.01
Emph. S. Expressiveness	-.07	-.03	-.03	.14	.00	.16	.19	.07	.24	-.04	.21	.05
Squared Class Factors (Quadratic Effects)												
Warmth, sq.	-.07	.19	.17	-.21	.40*	-.02	-.09	.19	.00	-.37*	-.32	-.41**
Control, sq.	.32*	-.01	.20	.07	.15	.24	-.16	.06	-.01	.00	.15	.02
Common, sq.	.19	.05	.21	.28	.03	.19	.22	.29	.36*	-.01	-.16	-.02
Nonind., sq.	.31*	-.13	.13	.14	-.16	.02	-.01	-.08	-.05	.34*	.12	.34**
Partic., sq.	-.16	-.02	-.18	-.43**	-.05	-.42**	-.03	.13	.04	.17	-.14	-.01
Express, sq.	-.10	.01	-.15	-.07	.09	.06	.16	-.24	-.11	-.08	.03	-.15
Mult. R	.65	.48	.52	.47	.70	.65	.65	.72	.71	.69	.72	.72
Mult. R^2	.42	.23	.27	.22	.49	.42	.42	.52	.51	.48	.52	.52

Note: Positive signs for betas of squared terms indicate higher outcome scores for the high and low extremes than for the middle range of the independent variable; negative signs indicate higher outcome scores for the middle range than for the extremes.

$^{*}p < .10$; $^{**}p < .05$ $^{***}p < .01$

Relationships of these classroom dimensions to students' self- and class-evaluations, and to the two factors representing teachers' ratings of students' classroom behavior, are presented in Table 35. These dependent variables, having been obtained only once, at the end of the school year, are the only ones which are not residuals. Classroom warmth appeared to have its major effect on these dependent variables for boys. Boys in warm classes were rated as persevering by their teachers, and expressed enjoyment of the classes (although the latter variable also demonstrated a quadratic effect, with high scores on self-rated enjoyment obtained in classes at both extremes of the warmth dimension). Classrooms which were controlled and orderly also showed relatively high ratings for boys' perseverance (suggesting that they were responding to an emphasis on an industrious, disciplined approach to tasks in these classes), and for children's self-rated enjoyment of class (a fairly weak effect, however). A stronger quadratic effect on class enjoyment was found for girls--they stated greatest enjoyment in classes which were moderate with respect to the permissiveness vs. control dimension. Boys also showed the greatest social involvement in such classes.

Girls tended to persevere most in classes which were highly or moderately varied; with boys' enjoyment of class, the same variable (commonality of activity) showed both a positive, linear relationship and a quadratic one (with a U-shaped relationship). Boys also tended to perceive the greatest classroom disruptiveness in the least individualized classrooms; while children (girls in particular) stated greatest enjoyment for classes in which there was much energetic encouragement of academic participation. Boys' activity and curiosity showed a U-shaped relationship with this classroom variable. Girls' activity/curiosity was maximal in classes with a strong emphasis on student expressiveness and exploration, while for children of both sexes there was a clear U-shaped relationship between this classroom variable and the teachers' ratings of perseverance and social maturity; children were seen as

Table 35

Regression Coefficients (Betas) and Multiple Regression Coefficients from Multiple Regression Analyses Showing Class-Level Main Effects on Student- and Teacher-Rating Outcomes

Independent Variables	Dependent Variables														
	Student Self- and Class Evaluations									Teacher Ratings of Students					
	Enjoyment of Class			Social Involvement			Percv'd. Disrupt.			Perseverance			Activity, Curiosity		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Aggregated Ind. Orients. and SES (Controls)															
Pref. for class w. autonomy	.10	.53***	.53***	.06	.05	.15	.23	-.11	.01	.09	.38**	.39**	-.08	.10	.08
Compliant, conforming orntn.	.31*	.26	.37**	.16	.23	.28	.11	.17	.10	-.05	.10	-.09	-.10	.11	-.08
Pers. contr., intr. mot.	.28	.51***	.13	.03	-.11	.23	.19	-.25	.07	.12	.02	-.06	.13	.09	.19
Achievement motivation	.09	.19	.26	.32	.23	.28	-.09	-.01	-.11	.24	.17	.39*	.19	-.18	.18
SES	-.22	.05	.08	-.03	.04	-.06	-.55***	-.34	-.61**	.09	.32	.09	.39*	.16	.13
Class Factors (Linear Effects)															
Warmth	.57***	.04	.43**	.20	.18	.20	.00	.06	-.01	.48**	.09	.46**	-.05	-.16	-.03
Control, orderliness	.20	.12	.36*	.25	.00	.14	.01	-.21	-.17	.40*	.10	.41**	-.21	-.21	-.16
Commonality	.42**	-.20	.20	.09	-.11	-.05	.11	.23	.18	.12	-.41**	-.09	-.26	-.18	-.18
Non-individualization	.06	-.10	-.01	.08	.04	.13	.32*	.06	.24	.05	.04	.11	-.16	-.14	-.07
Enc. of Acad. Participation	.14	.26**	.24*	.05	-.03	.08	.24	-.02	.12	-.01	.09	.01	-.16	.20	-.01
Emph. S. Expressiveness	.07	-.12	.02	.06	-.10	-.17	-.16	.12	-.05	.10	.02	.11	.12	.47**	.26
Squared Class Factors (Quadratic Effects)															
Warmth, sq.	.43*	-.08	.30	.27	-.10	.22	.14	.10	.09	.29	-.10	.17	-.14	.02	.01
Control, sq.	.01	-.47***	-.26	-.36*	.14	-.22	.08	-.03	-.03	.26	.11	.20	-.06	.01	-.03
Common, sq.	.32*	-.07	.10	.21	-.27	-.08	.26	.14	.27	-.06	-.39*	-.19	-.19	-.30	-.12
Nonind., sq.	.03	.06	.00	-.09	.14	.06	-.13	.13	.04	-.06	-.01	-.04	.28	-.16	.10
Partic., sq.	-.05	-.09	-.12	-.12	-.05	-.06	.01	-.11	-.06	-.06	-.11	-.16	.30*	.11	.24
Express, sq.	-.12	.10	.03	.06	-.09	-.07	-.11	-.06	-.13	.36**	.36*	.38**	.09	-.02	.07
Mult. R	.66	.81	.74	.63	.53	.57	.70	.68	.66	.67	.64	.66	.68	.58	.63
Mult. R^2	.44	.66	.55	.40	.29	.32	.48	.46	.43	.45	.41	.44	.47	.34	.40

Note: Positive signs for betas of squared terms indicate higher outcome scores for the high and low extremes than for the middle range of the independent variable; negative signs indicate higher outcome scores for the middle range than for the extremes.

$^{*}\underline{p} < .10$; $^{**}\underline{p} < .05$; $^{***}\underline{p} < .01$

persevering most in classes which were at the high and low extremes in emphasizing student expressiveness. This may indicate that the children in the different types of classrooms represented by these two extremes were persevering at different types of tasks; possibly creative, exploratory tasks in the most expressive classes and more rote, academic tasks in the least expressive (this, however would lead one to expect a parallel relationship between this dependent variable and the encouragement of academic participation, which was not found).

To summarize these classroom dimension main effects: Classroom warmth and friendliness showed main effects almost exclusively with boys; boys in warm classrooms wrote well, thought well of themselves, persevered, and enjoyed the classes; girls' creativity and value on equality were enhanced in warm classes. Classrooms which were controlled and orderly produced the greatest gains in cognitive skills, in particular achievement test performance and writing quality. This permissiveness vs. control dimension was also involved in some quadratic effects; for example, girls' enjoyment of class and boys' social involvement were highest in classrooms at the moderate position on this dimension. Commonality of class activities showed a few scattered main effects, relating most clearly to the development of boys' cognitive skills. The significant effects of individualization of teacher-student interaction were also fairly scattered; boys' inquiry skill and value on self-direction were most enhanced in the most individualized classrooms. The clearest effect of the classroom factor, "energetic encouragement of academic participation," was a negative relationship with the creativity residuals; the greater the scores on this classroom variable, the lower the creativity scores. Emphasis on student expressiveness produced a few significant main effects, the clearest a quadratic (U-shaped) relationship with perseverance/social maturity.

Classroom Dimension by Child Dimension Interactions

A summary of the effects produced in the analyses of variance involving the various combinations of classroom factors and child factors is presented in Table 64, Appendix A. Means, F values, and significance levels for interactions which reached the .05 level or better are presented in Tables 36 to 47. (Although a cutoff point of .10 was used to identify F values representing interactions worthy of examination and interpretation in the cluster by cluster interactions discussed in the preceding section, the .05 level was used with the present very large set of analyses merely in order to reduce the number of relationships to be investigated, and to limit them to the strongest interaction effects.)

Significant two-way interactions between classroom warmth and child factors are presented in Table 36. Three of the interactions with warmth reached the .05 level of significance, two of them involving socioeconomic status. The high-SES children showed greater residual gains in value on equality and concern for others in relatively cold and unfriendly classrooms, while the low-SES children showed a slight tendency to score higher on these dependent variables in warmer classrooms. Children at the high and low extremes of the compliant, conforming orientation distribution tended to be most socially involved in warm classes, while those in the moderate range were more socially involved in the colder classrooms.

Three way interactions, involving classroom warmth, various child factors, and sex, are shown in Table 37. There were nine of these significant interactions, three involving SES, three involving achievement motivation, two involving personal control, and one involving compliant, conforming orientation. Low SES boys scored highest in residual achievement test performance and in enjoyment of class in classes scoring high on the warmth dimension; their self-esteem was maximized in moderately or very warm classes. High SES boys, on the other hand, tended to do better with respect to the same three outcome variables in relatively cold classes. For girls, the pattern was somewhat different: they tended to do best in classes which were either moderate or high on warmth at all SES levels. It seems likely that warm classrooms

Table 36

Means for Significant 2-Way Interactions Between Child Factors (plus SES) and Class Factor 1: "Warmth, Friendliness vs. Coldness"

Dependent Variable	Child Variable	Levels	Levels of Class Var.			Between-Class-Level *t* Values			
			Low	Med	High	L vs. M	L vs. H	M vs. H	*F* (4,94)
Value on Equality	SES	Low	-.11	-.02	.02	NS	1.78*	NS	2.61**
		Med	.05	.07	-.03	NS	NS	NS	
		High	.12	-.11	-.02	3.33***	2.04**	NS	
Concern for Others	SES	Low	-.07	-.03	-.02	NS	NS	NS	2.57**
		Med	-.05	.06	.02	1.90*	NS	NS	
		High	.19	.03	-.01	2.54**	3.24***	NS	
Social Involvement	Compliant Orientn.	Low	-.20	-.10	.10	NS	3.24***	2.22**	2.84**
		Med	.09	-.01	-.10	NS	2.07**	NS	
		High	.02	-.09	.16	NS	NS	2.63***	

* $p < .10$
** $p < .05$
*** $p < .01$

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are especially beneficial to low SES boys because they help acclimatize them and make them feel more comfortable in classroom situations which they may find relatively difficult and unfamiliar. This may be particularly true in a social setting such as that of Montgomery County where families on the whole are relatively affluent, and where, therefore, the lower SES children may feel more atypical and distant from their school peers than they might in other school settings. This may be particularly true for low-SES boys, who have often been found to have a greater degree of difficulty with school than low-SES girls. The better performance of high SES boys in the "cooler" classrooms is not easy to account for, but may relate to a preference for a more businesslike, less "personal" approach to academic tasks. The preference of all girls for classrooms which are at least moderately warm is consistent with numerous other research findings which have

Table 37

Means for Significant 3-Way Interactions Between Child Factors (plus SES), Sex, and Class Factor 1: "Warmth, Friendliness vs. Coldness"

Dependent Variable	Child Variable	Sex, Levels	Levels of Class Var.			Between-Class-Level t Values			
			Low	Med	High	L vs. M	L vs. H	M vs. H	F (4,94)
Achievement Test Performance	SES	**Boys**							
		Low	-.16	-.12	-.01	NS	2.87***	2.38**	2.95**
		Med	-.15	-.03	.01	2.57**	3.46***	NS	
		High	.12	-.16	.02	5.87***	2.18**	3.69***	
		Girls							
		Low	-.08	-.04	-.03	NS	NS	NS	
		Med	.12	.01	.18	2.52***	NS	4.03***	
		High	-.09	.13	.18	4.98***	3.62***	NS	
Creativity	Achievement Motivation	**Boys**							
		Low	-.13	-.11	.20	NS	6.16***	5.74***	3.56**
		Med	-.39	-.12	.00	5.07***	7.30***	2.23**	
		High	-.22	-.06	-.21	3.02***	NS	2.88***	
		Girls							
		Low	-.20	.14	.16	6.24***	6.55***	NS	
		Med	-.05	.12	.28	3.02***	5.98***	2.96***	
		High	-.15	.25	.43	7.34***	10.65***	3.32***	
Inquiry Skill	Personal Control, Intrinsic Motivation	**Boys**							
		Low	-.22	-.37	-.26	2.10**	NS	NS	2.90**
		Med	-.13	-.05	.14	NS	3.63***	2.61**	
		High	.05	.35	.28	4.01***	3.12***	NS	
		Girls							
		Low	-.43	.24	.00	8.90***	5.75***	3.15***	
		Med	.00	.08	-.03	NS	NS	NS	
		High	.22	.20	.14	NS	NS	NS	
Self-Esteem	SES	**Boys**							
		Low	-1.59	.29	.05	4.82***	4.21***	NS	2.74**
		Med	-.83	.39	1.21	3.16***	5.24***	2.10**	
		High	1.49	-.76	.26	5.77***	3.19***	2.58**	
		Girls							
		Low	-1.77	-.67	-1.09	2.81***	1.73*	NS	
		Med	-.26	.30	-.97	NS	1.86*	3.57***	
		High	-.19	1.37	1.25	3.80***	3.51***	NS	
Value on Equality	Compliant, Conforming Orientation	**Boys**							
		Low	-.05	.01	.03	NS	1.88*	NS	2.69**
		Med	-.02	-.06	-.33	NS	7.07***	6.20***	
		High	-.19	-.25	-.17	NS	NS	1.74*	
		Girls							
		Low	.33	.14	.12	4.52***	4.94***	NS	
		Med	.11	.01	.11	2.26**	NS	2.37**	
		High	.07	.00	-.04	1.73*	2.55**	NS	

Table 37 (continued)

Means for Significant 3-Way Interactions Between Child Factors (plus SES), Sex, and Class Factor 1: "Warmth, Friendliness vs. Coldness"

Dependent Variable	Child Variable	Sex, Levels	Levels of Class Var.			Between-Class-Level t Values			F (4,94)
			Low	Med	High	L vs. M	L vs. H	M vs H	
Value on Self-Direction	Personal Control, Intrinsic Motivation	Boys							
		Low	.09	.04	.05	NS	NS	NS	3.33***
		Med	-.16	.05	.10	4.66***	5.93***	NS	
		High	-.05	.16	.10	3.21***	3.47***	1.74*	
		Girls							
		Low	-.27	-.04	-.04	3.24***	5.68***	NS	
		Med	.10	.02	-.06	1.76*	3.61***	1.85*	
		High	-.08	-.04	.00	NS	3.64***	2.72***	
Enjoyment of Class	Achievement Motivation	Boys							
		Low	-.40	-.25	-.07	2.10**	4.56***	2.45**	2.57**
		Med	-.37	-.08	-.28	4.08***	NS	2.83***	
		High	-.20	-.24	.25	NS	6.38***	6.98***	
		Girls							
		Low	-.04	-.02	-.13	NS	NS	NS	
		Med	.06	.35	.41	4.09***	4.88***	NS	
		High	.10	.44	.19	4.85***	NS	3.57***	
Enjoyment of Class	SES	Boys							
		Low	-.39	-.09	-.02	4.48***	5.60***	NS	3.00**
		Med	-.31	-.19	.00	1.70*	4.51***	2.81***	
		High	.07	-.30	-.13	5.58***	3.06***	2.52**	
		Girls							
		Low	.00	.11	.29	1.64*	4.37***	2.73***	
		Med	.02	.33	-.01	4.66***	NS	5.14***	
		High	-.07	.24	.23	4.74***	4.49***	NS	
Perceived Disruptiveness	Achievement Motivation	Boys							
		Low	.03	.15	-.17	3.63***	4.76***	7.59***	2.51**
		Med	.07	.01	-.22	NS	6.78***	5.30***	
		High	.18	.09	-.19	2.05**	8.31***	6.46***	
		Girls							
		Low	.15	-.05	.02	4.70***	3.87***	1.73*	
		Med	-.13	.07	.08	3.20***	3.23***	NS	
		High	.14	-.09	-.11	5.30***	5.94***	NS	

* $p \leq .10$
** $p \leq .05$
*** $p \leq .01$

shown girls (in this culture at least) to be more socially oriented, more interested and involved in interpersonal relationships, and the like (cf. Maccoby, 1966).

Achievement motivation was involved in three-way interactions (along with classroom warmth and sex) affecting creativity, enjoyment of class and perceived disruptiveness. Boys low in achievement motivation were most creative in, and enjoyed most, classrooms which were high on warmth and friendliness; they tended to see most disruptiveness in moderately warm classrooms. Highly achievement-motivated boys were most creative in moderately warm classrooms (perhaps they supplied for themselves some of the motivation which classroom--and teacher--warmth provided to the boys who were not themselves well-motivated). At the same time, the highly motivated boys stated greatest enjoyment of the classes which were very warm, while those with moderate achievement motivation preferred classes which were moderate on warmth. Boys who scored in the low or moderate achievement motivation groups tended to perceive high levels of class disruptiveness in the coldest classes. Girls again generally favored classes which were either highly or moderately warm. The highest creativity cell mean for girls combined highly motivated girls with very warm classrooms; at the same time, the most motivated girls reported the greatest enjoyment in moderately warm classes (while moderately motivated girls enjoyed classrooms which were either moderate or high on warmth, and the relatively unmotivated girls showed no differentiation in enjoyment between classrooms differing in warmth). Girls at both extremes of achievement motivation saw relatively cold classrooms as containing the greatest disruptiveness, while moderately motivated girls saw the greatest disruptiveness in classes which were moderately or highly warm.

Personal control was involved in two significant interactions with classroom warmth, one affecting inquiry skill, the other, value on self-direction. Boys who scored low on personal control/intrinsic motivation showed only slight variation between classes varying with respect to warmth, but with a slight trend in favor of the "colder" classes; boys with moderate or high scores on personal control did best with respect to creativity and self-direction in classes which were highly or moderately warm. It may be that the more intrinsically motivated boys felt freer to explore their own interests (and thereby also developed their inquiry skills) in classes which were warm, friendly, and interpersonally involved. For girls, the patterns represented in these two interactions were somewhat different. The only significant differentiation with respect to girls' inquiry skill occurred for those scoring low in personal control/intrinsic motivation; they did best in classes which were moderate with respect to warmth. The highest value on self-direction scores for girls occurred in warm classes for those scoring high on personal control and in cold classes for those with moderate personal control scores.

Value on equality was influenced by one three-way interaction involving compliant, conforming orientation, classroom warmth, and sex. Non-compliant boys stated their greatest value on equality in warm classes, while non-compliant girls did so in cold classes. Compliant boys developed a value on interpersonal equality equally in both warm and cold classes, while compliant girls did so primarily in the colder classes. The major sex difference in this interaction occurred for the non-compliant children, with the boys valuing equality in warm, and girls, in cold classes. We have no explanation for this difference.

Significant two-way interactions involving classroom control and orderliness (vs. lack of control) are presented in Table 38. Three of these interactions were with the child factor, "preference for class with autonomy;" the outcome measures affected were self-esteem, value on task self-direction, and enjoyment of class. There was some similarity in the shapes of these three interactions. Generally, the children who stated the least preference for autonomy scored highest on these dependent variables in the least controlled (i.e., most permissive and autonomous)

Table 38

Means for Significant 2-Way Interactions Between Child Factors (plus SES) and Class Factor 2: "Control, Orderliness vs. Lack of Control"

Dependent Variable	Child Variable	Levels	Levels of Class Var.			Between-Class-Level t values			F (4,94)
			Low	Med	High	L vs M	L vs H	M vs H	
Creativity	Compliant Orientation	Low	-.22	-.06	.32	1.85*	6.25***	4.40***	3.24**
		Med	-.24	-.11	.17	NS	4.65***	3.22***	
		High	.00	-.02	.02	NS	NS	NS	
Self-Esteem	Preference for Class with Autonomy	Low	.10	.06	-.27	NS	NS	NS	2.56**
		Med	-1.02	-.85	.95	NS	3.34***	3.04***	
		High	-.20	.83	-.17	1.75*	NS	1.69*	
Value on Self-Direction	Preference for Class with Autonomy	Low	.06	-.04	-.08	NS	2.06**	NS	2.85**
		Med	.00	.00	-.10	NS	NS	NS	
		High	.05	.03	.24	NS	2.64***	2.99***	
Enjoyment of Class	Preference for Class with Autonomy	Low	.17	.04	.01	NS	1.77*	NS	4.20***
		Med	-.05	.14	.01	2.11**	NS	NS	
		High	-.09	.10	-.45	2.12**	3.96***	6.08***	
Perseverance, Social Maturity	Compliant Orientation	Low	-.05	.01	.33	NS	4.07***	3.43***	2.94**
		Med	-.02	-.12	.07	NS	NS	2.05**	
		High	.14	-.19	-.02	3.48***	NS	1.84*	

* p <.10
** p <.05
*** p <.01

classrooms, while those with greater preference for autonomous situations tended to have higher scores in moderately or highly controlled and orderly classrooms. This is approximately the opposite of what was expected for the interactions between these variables. It is possible that some sort of a "compensation" mechanism is reflected in these results. Children without a strong orientation towards individual autonomy may find an unexpected benefit from classrooms in which such autonomy is pervasive and relatively unavoidable; children with stronger orientations toward autonomy may similarly be benefited by being in situations which teach them some of the advantages of more disciplined, orderly and controlled approaches to tasks. To put this more generally, children with certain needs and preferences may derive some advantage from situations which force them to explore options and activities which their own inclinations would lead them to avoid.

The other two interactions shown in Table 38 involve class control and orderliness and children's compliant, conforming orientation. These show fairly similar effects on residual creativity and on the teacher rating factor "perseverance, social maturity." For both of these outcome measures, children in the low or medium compliance groups show their highest scores in the most controlled and orderly classrooms. The level of class control did not differentially influence creativity for the highly compliant children; they did, however, persevere most in the least controlled and orderly classrooms. Here again a compensation mechanism seems to offer the most likely explanation: non-compliant children are benefited by a controlled situation in which a fair amount of compliance is required, while relatively more compliant children derive some advantage (at least with respect to perseverance) in situations which force them to be more self-directing and self-reliant. These results for children's compliance and preference for autonomy are comparable to those found with the cluster by cluster analyses presented in the last section, particularly with respect to child clusters one and three (each containing these two child factors as central components).

Three-way interactions, involving classroom control, various child factors, and sex, are presented in Table 39. Children's preference for class with autonomy appeared with three of these interactions, affecting residual achievement test performance, value on self-direction, and perseverance. The interactions relating to the first two of these outcome measures showed some indications of the "compensation" mechanism discussed with regard to the last table (also involving the same major independent variables). Achievement test performance was generally highest in the most controlled and orderly classrooms (consistent with the main effect

Table 39

Means for Significant 3-Way Interactions Between Child Factors (plus SES), Sex, and Class Factor 2: "Control, Orderliness vs. Lack of Control"

Dependent Variable	Child Variable	Sex, Levels	Levels of Class Var.			Between-Class-Level *t* Values			*F* (4,94)
			Low	Med	High	L vs M	L vs H	M vs H	
Achievement Test Performance	Preference for Class with Autonomy	Boys							
		Low	.01	.07	-.05	1.79*	1.90*	3.69***	4.12***
		Med	-.03	-.16	.15	3.96***	5.28***	9.24***	
		High	-.21	.03	.10	7.56***	9.64***	2.08**	
		Girls							
		Low	-.03	.09	.15	3.53***	5.61***	2.08**	
		Med	-.10	.05	.16	4.56***	7.82***	3.26***	
		High	.03	.01	.17	NS	4.26***	4.69***	
Inquiry Skill	Achievement Motivation	Boys							
		Low	-.10	-.15	.19	NS	5.13***	5.95***	2.79**
		Med	-.[illegible]6	.01	.12	2.86***	4.80***	1.94*	
		High	-.07	-.27	.30	3.62***	6.36***	9.98***	
		Girls							
		Low	-.01	-.29	.06	5.01***	NS	6.13***	
		Med	.03	.09	.19	NS	2.73***	1.68*	
		High	.04	.30	.13	4.55***	NS	2.97***	
Self-Esteem	Achievement Motivation	Boys							
		Low	-1.08	.19	.62	3.07***	4.12***	NS	2.94**
		Med	-.55	-.32	.76	NS	3.17***	2.63***	
		High	.89	-.90	.40	4.36***	NS	3.17***	
		Girls							
		Low	-1.16	-1.67	-.34	NS	1.99**	3.23***	
		Med	.00	-.12	-.05	NS	NS	NS	
		High	-.48	2.35	.14	6.89***	NS	5.38***	
Value on Self-Direction	Preference for Class with Autonomy	Boys							
		Low	.10	.01	-.13	2.17**	5.66***	3.49***	2.79**
		Med	-.01	-.04	-.04	NS	NS	NS	
		High	.13	.13	.15	NS	NS	NS	
		Girls							
		Low	.03	-.09	-.03	3.01***	1.69*	NS	
		Med	.01	.05	-.17	NS	4.47***	5.41***	
		High	-.02	-.08	.33	NS	8.88***	10.25***	
Perceived Class Disruptiveness	Compliant Orientation	Boys							
		Low	.06	.05	-.20	NS	5.45***	5.27***	2.50**
		Med	.14	-.06	-.16	4.10***	6.17***	2.08**	
		High	-.04	.04	.16	1.68*	4.13***	2.45**	
		Girls							
		Low	.09	-.03	-.13	2.48**	4.56***	2.08**	
		Med	.06	.13	-.17	NS	4.92***	6.45***	
		High	.00	.18	-.19	3.76***	4.05***	7.82***	

Table 39 (continued)

Means for Significant 3-Way Interactions Between Child Factors (plus SES), Sex, and Class Factor 2: "Control, Orderliness vs. Lack of Control"

Dependent Variable	Child Variable	Sex, Levels	Levels of Class Var.			Between-Class-Level t Values			
			Low	Med	High	L vs M	L vs H	M vs H	F (4,94)
Perseverance, Social Maturity	Preference for Class with Autonomy	Boys							
		Low	.11	-.12	.14	3.73***	NS	4.12***	2.66**
		Med	-.24	-.64	-.01	6.51***	3.72***	10.24***	
		High	-.40	-.34	-.06	NS	5.57***	4.59***	
		Girls							
		Low	.29	.31	.38	NS	NS	NS	
		Med	.20	.12	.37	NS	2.76***	3.98***	
		High	.40	.04	.01	5.85***	6.38***	NS	
Perseverance, Social Maturity	Personal Control, Intrinsic Motivation	Boys							
		Low	-.39	-.64	-.26	3.89***	1.92*	5.81***	3.60***
		Med	-.27	-.33	-.15	NS	1.79*	2.76***	
		High	.13	.04	.42	NS	4.48***	5.82***	
		Girls							
		Low	-.38	.03	.15	6.38***	8.22***	1.84*	
		Med	.39	.00	.20	6.15***	3.05***	3.10***	
		High	.67	.44	.47	3.48***	3.04***	NS	

* p <.10
** p <.05
*** p <.01

findings reported earlier); the one exception was for boys with low preference for autonomy, who showed better achievement in moderately controlled classrooms. With value on self-direction, children of both sexes who stated preferences for more highly structured classrooms scored highest in the least structured (most autonomous) classrooms, while girls who preferred autonomy scored highest in the most structured classrooms (scores were not differentiated between classrooms for boys with high or moderate preferences for autonomy). Thus for each of these two outcome measures, there was some indication that children oriented toward autonomy actually did better in classes which imposed a fair amount of external discipline on them, while children oriented toward more external control were benefited by classrooms which required them to be somewhat more autonomous and self-directing. The interaction with which the same independent variables influenced children's perseverance took a somewhat different shape. Boys generally persevered most in the most highly controlled classes, whatever their level of preference for autonomy (although the low-low cell also showed a high score); girls, however tended to persevere best when there was an approximate match between their preference for autonomy and the classroom's provision for autonomy--those with a strong preference for autonomy persevered most in the least controlled classrooms, and those with a moderate preference did so in the most controlled classrooms. A generally similar finding was obtained in the pilot study.

Achievement motivation appears in two of the three-way interactions shown in Table 39, influencing inquiry skill and self-esteem. Children of both sexes who scored low on achievement motivation (and also, in most cases, those who scored moderately) did best in highly controlled and orderly classes with respect to both of these outcome measures; girls with high achievement motivation scores did best in moderately controlled classrooms, while boys in this grouping obtained the highest self-esteem scores in the least controlled (most permissive) classrooms, but obtained their highest inquiry scores in the most controlled ones. It may be suggested that children with low achievement motivation require the close external direction and supervision provided in the more controlled classrooms, while the highly motivated children are more able to provide these functions themselves and thus, on the whole, do well in classrooms which allow for relatively more student autonomy and self-direction.

A similar process appeared to be involved in the interaction, also shown in Table 39, which included children's personal control/intrinsic motivation and influenced perseverance / social maturity. The relationship again appeared to hold primarily for girls; those with low personal control and intrinsic motivation persevered most in the most controlled classes, while those with high or moderate scores on this variable did so in the least controlled classes. Boys, however, tended to persevere most in the most controlled classes at all levels of personal control. For girls, then, it again appears that they work best in externally controlled classrooms when they are relatively lacking in internal direction, and best in classes which allow for self-direction when they are oriented toward providing it.

The remaining interaction shown in this table related children's compliant, conforming orientation (along with classroom control and sex) to their perceptions of classroom disruptiveness. The general trend, which occurs for both sexes (but most clearly for boys), is for the relatively noncompliant children to see most disruptiveness in the least controlled classrooms, and for compliant children to see it in more controlled classrooms. It may be that the compliant children were in each case more likely to accept general classroom norms and standards, including tolerance of a wider range of behaviors in the more permissive classrooms (see Solomon and Kendall, 1975). Thus they may see more disruptiveness in controlled classrooms (where the setting implicitly defines more behaviors as being inappropriate), and less in permissive classrooms (where fewer are defined as inappropriate).

Two of the two-way interactions represented in Table 40, showing the joint effect of children's personal control/intrinsic motivation and classroom commonality of activity on creativity and enjoyment of class, show patterns which suggest a process similar to one which was suggested to account for some of the results seen in the last table. Although the shapes of these two interactions are not precisely the same, in each case there is a slight trend for children with lower personal control and intrinsic motivation scores to do best with respect to these outcome measures in classrooms with more common, externally-imposed activities, and for children with higher personal control scores to do best in classrooms which are more characterized by varied, student-initiated activities. Thus, those children

Table 40

Means for Significant 2-Way Interactions Between Child Factors (plus SES) and Class Factor 3: "Commonality vs. Variety of Activities"

Dependent Variable	Child Variable	Levels	Levels of Class Var.			Between-Class-Level t Values			
			Low	Med	High	L vs M	L vs H	M vs H	F (4,94)
Creativity	Personal Control, Intrinsic Motivation	Low	-.18	-.09	-.04	NS	1.84*	NS	2.94**
		Med	.06	-.14	-.05	2.64***	NS	NS	
		High	.07	.15	-.07	NS	1.70*	2.76***	
Enjoyment of Class	Personal Control, Intrinsic Motivation	Low	-.09	-.14	-.15	NS	NS	NS	3.63***
		Med	-.14	-.14	.18	NS	3.54***	3.51***	
		High	-.06	.23	.04	3.18***	NS	2.07**	
Perceived Class Disruptiveness	Compliant Orientation	Low	-.04	-.12	.08	NS	1.72*	2.93***	3.09**
		Med	-.02	.10	-.11	1.84*	NS	3.09***	
		High	-.01	.02	.06	NS	NS	NS	

* $p < .10$
** $p < .05$
*** $p < .01$

who are motivated to provide their own control and direction show most enjoyment and creativity in classrooms which allow for the exercise of this motivation, those with little such motivation show most when they are provided with more external direction. Some evidence of similar processes, relating to different dependent variables, was found with "personal control orientation" in the pilot study.

The other interaction in Table 40 relates children's compliant, conforming orientation and commonality of class activities to perceived class disruptiveness. Relatively non-compliant children saw the most disruptiveness in classrooms with the greatest commonality of activities, while the moderately compliant children did so in moderately varied classrooms; for children high in compliance, there was no difference across levels of the class variable in perceived disruptiveness. It is possible that the relatively more compliant children feel less comfortable in classes with less commonality of activity, and therefore perceive more disruptiveness in these classrooms. This explanation, however, is inconsistent with that offered to account for the interaction involving compliant orientation, class control, and perceived disruptiveness, shown in Table 39.

The two significant three-way interactions involving commonality vs. variety of classroom activities, shown in Table 41, demonstrate different directions of relationship for the two sexes. The two child variables represented in these interactions are both measures of internal motivation, "achievement motivation" and "personal control, intrinsic motivation." For girls, the trend is for those with greater internal motivation to score higher on the outcome measures (value on equality and activity / curiosity) in the classrooms with more student-initiated, varied activities (girls with high achievement motivation, who gain most in value on equality in classrooms with more common activities, constitute an exception to this trend). The trend is generally reversed for boys; it is primarily those with low (or moderate) motivation who score highest in the classrooms with more varied activities. It appears, at least with regard to these outcomes, that boys with low motivation are encouraged by situations in which they are allowed to explore and initiate their own tasks, while girls with low motivation are helped by more structured situations with common activities, and without the necessity of supplying their own directions.

The two internal motivation factors are also involved in the two significant two-way interactions (influencing self-esteem and value on equality) presented in Table 42. Children high in achievement motivation gain the most in self-esteem in the least individualized classrooms (while their gains in the highly individualized classrooms were moderate); low achievement-motivated children showed the highest self-esteem in moderately individualized classrooms; and moderately achievement-motivated children scored highest in the most individualized classrooms. Although the trend is not really clear-cut, it shows some tendency for self-esteem scores

Table 41

Means for Significant 3-Way Interactions Between Child Factors (plus SES), Sex, and Class Factor 3: "Commonality vs. Variety of Activities"

Dependent Variable	Child Variable	Sex, Levels	Levels of Class Var.			Between-Class-Level t Values			
			Low	Med	High	L vs M	L vs H	M vs H	F (4,94)
Value on Equality	Achievement Motivation	**Boys**							
		Low	-.12	-.04	-.21	NS	NS	3.02***	3.15**
		Med	-.23	-.06	-.04	3.17***	3.45***	NS	
		High	-.07	-.11	-.02	NS	NS	NS	
		Girls							
		Low	-.04	.03	.16	NS	3.76***	2.44**	
		Med	.38	.13	.03	4.70***	6.50***	1.80*	
		High	-.01	.12	.13	2.40**	2.67***	NS	
Activity, Curiosity	Personal Control, Intrinsic motivation	**Boys**							
		Low	.17	.07	-.05	NS	3.46***	1.95*	2.53**
		Med	.23	.20	.17	NS	NS	NS	
		High	.28	.34	.33	NS	NS	NS	
		Girls							
		Low	-.34	-.48	-.08	2.29**	4.11***	6.40***	
		Med	-.02	-.22	-.22	3.17***	3.15***	NS	
		High	.26	-.09	-.16	5.50***	6.60***	NS	

* $p < .10$
** $p < .05$
*** $p < .01$

to be higher with increasing levels of achievement motivation in classrooms with less individualized teacher-student interaction. Perhaps a greater degree of individualization is particularly enhancing for those starting with a low level of achievement motivation; the added interaction with the teacher may serve to build up their self-image.

With respect to value on equality, the shape of the interaction (obtained, in this instance, with child personal control) is somewhat different. Children in moderately individualized classrooms scored highest on this outcome measure if they were either high or low on personal control and intrinsic motivation, while those in nonindividualized classrooms scored highest if they were moderate with respect to personal control.

Table 42

Means for Significant 2-Way Interactions Between Child Factors (plus SES) and Class Factor 4: "Nonindividualized vs. Individualized Teacher-Student Interaction"

Dependent Variable	Child Variable	Levels	Levels of Class Var.			Between-Class-Level *t* Values			*F* (4,94)
			Low	Med	High	L vs M	L vs H	M vs H	
Self-Esteem	Achievement Motivation	Low	-.59	-.04	-1.05	NS	NS	1.91*	3.97***
		Med	.84	-.10	-.88	1.77*	3.26***	NS	
		High	.37	-.54	1.30	1.71*	1.77*	3.48***	
Value on Equality	Personal Control, Intrinsic Motivation	Low	-.16	-.03	-.18	1.75*	NS	2.02**	2.99**
		Med	-.05	-.11	.16	NS	2.70***	3.49***	
		High	.04	.17	.07	1.71*	NS	NS	

* $p < .10$
** $p < .05$
*** $p < .01$

Achievement motivation and personal control/intrinsic motivation were also involved in the significant three-way interactions with individualized teacher-student interaction, influencing writing quality and self-confidence. These are shown in Table 43. For boys, the trend is for those with low motivation to do best in classes with greater individualization of teacher-student interaction, while those with higher levels of motivation do better in less individualized classrooms. This is similar to some effects we have discussed earlier; apparently the individualized interaction provides an impetus to boys who are relatively lacking in a strong internal motive, while those with stronger motivation require less external encouragement and actually do better with less of it. While some evidence of this trend is also apparent with respect to girls' self-confidence (with the exception of those low in personal control, who show greatest self-confidence in the least individualized classrooms), it is not seen for girls in the writing quality effect; their scores on this variable are generally highest in the most individualized classes for all levels of achievement motivation (although those with low motivation obtained high

Table 43

Means for Significant 3-Way Interactions Between Child Factors (plus SES), Sex, and Class Factor 4: "Nonindividualized vs. Individualized Teacher-Student Interaction"

Dependent Variable	Child Variable	Sex, Levels	Levels of Class Var.			Between-Class-Level t Values			F (4,94)
			Low	Med	High	L vs M	L vs H	M vs H	
Writing Quality	Achievement Motivation	Boys							
		Low	.13	.09	-.43	NS	5.80***	5.40***	2.50**
		Med	-.12	-.44	-.08	3.30***	NS	3.68***	
		High	-.31	-.18	-.37	NS	NS	1.94*	
		Girls							
		Low	.31	-.14	.32	4.64***	NS	4.73***	
		Med	.73	.12	.12	6.24***	6.21***	NS	
		High	.48	.06	.17	4.24***	3.20***	NS	
Self-Confidence	Personal Control, Intrinsic Motivation	Boys							
		Low	.01	-.23	-.21	6.24***	5.82***	NS	3.90***
		Med	-.07	-.12	.04	NS	2.84***	4.03***	
		High	.05	.08	.10	NS	NS	NS	
		Girls							
		Low	-.22	-.01	.01	5.31***	5.99***	NS	
		Med	.15	.09	.03	NS	3.13***	NS	
		High	.08	.10	.15	NS	1.78*	NS	

* $p < .10$
** $p < .05$
*** $p < .01$

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writing quality scores in classrooms manifesting both high and low levels of individualization).

Seven significant two-way interactions were obtained with the fifth classroom factor, "energetic encouragement of academic participation." These are presented in Table 44. Three of these, relating to self-esteem, self-confidence, and value on self-direction, involved the children's socioeconomic status as the second independent variable. With self-esteem and self-confidence (partially overlapping variables, it will be remembered) the shapes of the interactions are quite similar--with no differentiation across class level for the low SES children, highest scores in the least "energetically encouraging" classrooms for the moderate SES children,

Table 44

Means for Significant 2-Way Interactions Between Child Factors (plus SES) and Class Factor 5: "Energetic Encouragement of Academic Participation"

Dependent Variable	Child Variable	Levels	Levels of Class Var.			Between-Class-Level t Values			F (4,94)
			Low	Med	High	L vs M	L vs H	M vs H	
Creativity	Personal Control, Intrinsic Motivation	Low	-.02	-.16	-.13	1.85*	NS	NS	3.02**
		Med	.22	-.02	-.32	3.15***	6.97***	3.82***	
		High	.28	-.02	-.12	3.91***	5.17***	NS	
Self-Esteem	SES	Low	-1.08	-.93	-.42	NS	NS	NS	3.53***
		Med	1.01	-.49	-.60	2.91***	3.12***	NS	
		High	-.23	.82	1.17	2.03**	2.71***	NS	
Self-Confidence	SES	Low	-.11	-.09	-.07	NS	NS	NS	2.78**
		Med	.08	.02	-.05	NS	2.48**	NS	
		High	-.03	.02	.12	NS	3.21***	2.11**	
Value on Equality	Compliant Orientation	Low	.06	.18	.05	NS	NS	NS	2.68**
		Med	-.03	.02	-.08	NS	NS	NS	
		High	.09	-.18	-.20	3.56***	3.87***	NS	
Concern for Others	Personal Control, Intrinsic Motivation	Low	-.07	-.16	-.07	NS	NS	NS	2.80**
		Med	-.07	.11	-.10	2.81***	NS	3.20***	
		High	.19	.10	.16	NS	NS	NS	
Value on Self-Direction	SES	Low	.06	.01	.03	NS	NS	NS	2.66**
		Med	-.09	.05	-.04	2.52**	NS	1.75*	
		High	.08	-.07	.05	2.86***	NS	2.26**	
Perseverance, Social Maturity	Preference for Class with Autonomy	Low	.07	.20	.29	NS	2.31**	NS	2.99**
		Med	.14	-.25	.02	3.98***	NS	2.70***	
		High	-.08	-.04	-.05	NS	NS	NS	

* $p < .10$
** $p < .05$
*** $p < .01$

and highest scores in conjunction with moderate or high levels of the class variable for children at the high SES level. These interactions indicate that it is the high SES children who are most benefited by a very energetic emphasis on student academic participation. It may be that these children are more academically inclined; correlations shown in Table 62 (Appendix A) indicate that the high SES children obtained higher scores on prior achievement test performance and on the prior measures of the other cognitive skills as well. Thus it seems possible that their self-esteem may be particularly buoyed in classes with an active, energetic academic emphasis because they perform well and receive rewards and praise in such classrooms. However, this trend did not occur for the other SES interaction shown in this table, that influencing value on self-direction.

Children's personal control/intrinsic motivation is involved in another two of the interactions shown in Table 44; one relating to creativity, the other, to concern for others. With respect to creativity, children at all levels of personal control showed highest scores in the classrooms lowest on academic emphasis (consistent with the main effect shown for this variable, discussed earlier). Within these classrooms, the scores increase with increasing levels of children's personal control, so that the highest score shown in this sub-table is obtained by children who score high in personal control/intrinsic motivation, in classrooms which are least characterized by energetic encouragement of academic participation. The concern for others residual scores are also highest in the same cell (barely); however it is only the children with moderate personal control scores who show significant differentiation across the levels of the class variable. For them, scores on the dependent variable are highest in classrooms which are moderate with respect to encouragement of academic participation.

Children's compliant, conforming orientation and preference for class with autonomy are the variables involved in the other two interactions represented in

Table 44. For the former interaction, which relates to children's value on equality, the most compliant children demonstrate the highest equality value scores in classrooms in the lower third of the academic encouragement distribution (the differentiation across levels of the class variable was not significant for children in the other two compliance groupings). For the interaction involving preference for class with autonomy, which relates to the teachers' ratings of perseverance/social maturity, there is a slight trend for children with higher levels of preference for autonomy to persevere more in classes with lower levels of encouragement of academic participation. It is likely that a strong, teacher-imposed academic emphasis precludes the provision of many opportunities for children to follow their own interests under their own direction, which is a primary aim of those with autonomous orientations. Thus, those lacking such an orientation respond well to a strong academic emphasis by persevering at the tasks set.

Significant three-way interactions involving the same classroom factor are presented in Table 45. Two of these, affecting creativity and inquiry skill, include children's personal control/intrinsic motivation as an independent variable. The shape of the relationship with creativity is similar to that obtained in the two-way interaction relating the same child and classroom factors to creativity (shown in Table 44). Again, creativity is generally highest in the classrooms with the least academic emphasis (with the exception of girls with low personal control, who were more creative in the moderate classrooms), and within these classrooms, creativity scores are highest for the children with the highest levels of personal control/intrinsic motivation. The interaction which relates the same independent variables to inquiry skill presents a pattern which is rather difficult to interpret. Boys in the low personal control group show greatest inquiry skill in classes with moderate academic emphasis, while boys with moderate or high personal control scores show greatest inquiry skill in classes at the two extremes of the academic encouragement distribution. For girls, on the other hand, the pattern is almost reversed;

Table 45

Means for Significant 3-Way Interactions Between Child Factors (plus SES), Sex, and Class Factor 5: "Energetic Encouragement of Academic Participation"

Dependent Variable	Child Variable	Sex, Levels	Levels of Class Var.			Between-Class-Level *t* Values			
			Low	Med	High	L vs M	L vs H	M vs H	*F* (4,94)
Creativity	Personal Control, Intrinsic Motivation	**Boys**							
		Low	.01	-.40	-.22	7.20***	4.01***	3.20***	5.61***
		Med	.04	-.06	-.33	1.71*	6.43***	4.72***	
		High	.09	.08	-.35	NS	7.59***	7.41***	
		Girls							
		Low	-.06	.08	-.04	2.32**	NS	2.10**	
		Med	.40	.01	-.30	6.59***	11.92***	5.34***	
		High	.46	-.12	.11	10.11***	6.03***	4.07***	
Creativity	Achievement Motivation	**Boys**							
		Low	.19	-.05	-.18	4.48***	7.00***	2.52**	4.77***
		Med	.04	-.30	-.26	6.52***	5.67***	NS	
		High	-.01	.01	-.49	NS	9.27***	9.57***	
		Girls							
		Low	.25	-.11	-.06	7.04***	5.91***	NS	
		Med	.29	.18	-.12	2.14**	7.71***	5.57***	
		High	.55	-.10	.07	12.55***	9.18***	3.38***	
Inquiry Skill	Personal Control, Intrinsic Motivation	**Boys**							
		Low	-.35	-.15	-.33	2.70***	NS	2.44**	2.64**
		Med	.11	-.27	.10	4.95***	NS	4.85***	
		High	.33	.05	.29	3.72***	NS	3.15***	
		Girls							
		Low	.02	-.24	.00	3.31***	NS	3.09***	
		Med	-.11	.07	.09	2.44**	2.74***	NS	
		High	.08	.31	.18	3.03***	NS	1.72*	
Self-Esteem	Preference for Class with Autonomy	**Boys**							
		Low	.46	.29	-.29	NS	1.69*	NS	3.03**
		Med	-.54	-1.97	1.17	3.18***	3.82***	7.01***	
		High	.83	-.14	.39	2.17**	NS	NS	
		Girls							
		Low	-1.39	-.41	1.09	2.19**	5.53***	3.34***	
		Med	.30	.22	-1.01	NS	2.92***	2.75***	
		High	.31	-.87	.23	2.63***	NS	2.45**	
Enjoyment of Class	SES	**Boys**							
		Low	-.37	-.06	-.07	4.66***	4.60***	NS	2.74**
		Med	-.07	-.50	.05	6.40***	1.85*	8.25***	
		High	-.27	-.23	.14	NS	6.12***	5.52***	
		Girls							
		Low	.21	-.06	.25	4.00***	NS	4.70***	
		Med	.12	.10	.12	NS	NS	NS	
		High	.01	.08	.30	NS	4.27***	3.25***	

Table 45 (continued)

Means for Significant 3-Way Interactions Between Child Factors (plus SES), Sex, and Class Factor 5: "Energetic Encouragement of Academic Participation"

Dependent Variable	Child Variable	Sex, Levels	Levels of Class Var.			Between-Class-Level _t_ Values			_F_ (4,94)
			Low	Med	High	L vs M	L vs H	M vs H	
Perceived Class Disruptiveness	Preference for Class with Autonomy	Boys							
		Low	-.13	-.10	.06	NS	4.42***	3.80***	2.57**
		Med	-.03	.06	-.02	1.94*	NS	1.88*	
		High	-.06	.10	-.14	3.73***	2.11**	5.84***	
		Girls							
		Low	-.08	.07	-.17	3.55***	2.22**	5.76***	
		Med	.05	.01	-.07	NS	2.97***	1.96**	
		High	-.10	.05	.00	3.47***	2.28**	NS	
Perseverance, Social Maturity	SES	Boys							
		Low	-.49	-.44	-.46	NS	NS	NS	2.63**
		Med	-.06	-.34	.04	4.37***	NS	5.91***	
		High	.08	-.18	.10	3.95***	NS	4.28***	
		Girls							
		Low	-.19	.00	.16	2.98***	5.40***	2.43**	
		Med	.20	.43	.01	3.45***	2.96***	6.41***	
		High	.41	.33	.53	NS	1.89*	3.13***	

* $p < .10$
** $p < .05$
*** $p < .01$

those with low personal control show the greatest inquiry skill in classrooms at the extremes of that variable, while those with moderate or high personal control do so in classrooms showing moderate or high levels of academic encouragement.

The three-way interaction in which children's achievement motivation (along with sex and classroom encouragement of academic participation) relates to creativity also shows a slight reversal between the patterns obtained for boys and for girls. While for both sexes creativity residual scores were generally highest in the classrooms with the least encouragement of academic participation (again, consistent with the previously-discussed main effect), within the classrooms at this level the creativity scores were greatest for boys with low achievement motivation, but for girls with high achievement motivation. That this achievement motivation factor represents a somewhat different characteristic for boys than it does for girls is indicated by the fact, shown in Table 62, Appendix A, that the patterns of correlations with various other measures were generally different between the sexes. For girls it was positively correlated with prior achievement, self-confidence, and enjoyment of class; for boys it was not. Girls with high achievement motivation appear to have been more attuned to the norms, expectations and activities of the classrooms than boys with high achievement motivation. Such girls may then have been particularly influenced toward creativity in classes with a low level of academic emphasis because they were responding to the emphases and expectations of such classes. Boys with low achievement motivation may have been the most responsive to such classes because they allowed them an alternative acceptable direction for their classroom activities, other than the standard academic directions.

Children's preference for class with autonomy participates in two of the significant interactions shown in Table 45. The dependent variables affected in these interactions, self-esteem and perceived class disruptiveness, show approximately parallel results; cells in which self-esteem scores are high also tend to have low scores in perceived disruptiveness, and vice versa. This is particularly true for boys. The patterns in these interactions are also somewhat different between the sexes. Focusing on self-esteem, the trend for girls is to some degree consistent with a "matching" explanation, with those with less preference for autonomous classrooms showing higher scores in classrooms with more externally-imposed emphases on academic participation (i.e., those which do not allow for much student autonomy). A similar explanation could account for results obtained for boys at the moderate and high levels of preference for autonomy, but high self-esteem scores obtained in the low and moderate classrooms by those with the lowest preference for autonomy might be more consistent with a "compensation" mechanism similar to those discussed earlier.

While it is possible that different mechanisms may be involved in producing the results for children at different levels of a given independent variable, further speculation along these lines seems premature at this time.

The remaining two interactions portrayed in Table 45 both involve socioeconomic status as the child factor. For both of the dependent variables in these interactions, enjoyment of class and perseverance, the classrooms with the most energetic encouragement of academic participation generally produced the highest scores; apparently the combination of teacher energy and flamboyance with an emphasis on active academic participation was in general enjoyable and stimulated children's striving behavior as well. Some exceptions to this generalization occurred (accounting for the interactions), but lead to no clear conclusions.

Classroom factor six, "emphasis on student expressiveness," participated in five two-way interactions, shown in Table 46, three of them involving children's achievement motivation. The dependent variables affected by these three interactions were achievement test performance, value on equality and concern for others. For the first two of these, the trend is for children with higher levels of achievement motivation to do best in classrooms with less emphasis on expressiveness; this is seen particularly clearly in the relationship with value on equality. With concern for others, children at the higher levels of achievement motivation were undifferentiated across levels of the classroom variable, but the low achievement-motivated children expressed most concern for others in the most expressive classrooms. It may be suggested that an emphasis on student expressiveness helps provide children low in achievement motivation some of the interest and involvement in classroom activities which their own internal resources do not provide; those having stronger achievement motivation may be somewhat distracted or put off by the provision of external encouragement which they do not require, and hence perform better in classes with less of an emphasis on student expressiveness.

Table 46

Means for Significant 2-Way Interactions Between Child Factors (plus SES) and Class Factor 6: "Emphasis on Student Expressiveness"

Dependent Variable	Child Variable	Levels	Levels of Class Var.			Between-Class-Level t Values			F (4,94)
			Low	Med	High	L vs M	L vs H	M vs H	
Achievement Test Performance	Achievement Motivation	Low	.00	.09	-.05	NS	NS	2.51**	2.87**
		Med	.10	-.04	-.03	2.56**	2.39**	NS	
		High	.07	-.10	.03	3.02***	NS	2.28**	
Value on Equality	Achievement Motivation	Low	-.15	-.07	.11	NS	3.24***	2.25**	2.49**
		Med	.04	.09	-.01	NS	NS	NS	
		High	.08	-.05	-.02	1.67*	NS	NS	
Concern for Others	Achievement Motivation	Low	-.19	-.15	.10	NS	4.35***	3.76***	2.64**
		Med	.03	-.02	.02	NS	NS	NS	
		High	.12	.13	.11	NS	NS	NS	
Social Involvement	Preference for Class With Autonomy	Low	-.09	.10	-.17	2.29**	NS	3.23***	3.66***
		Med	-.02	-.10	.05	NS	NS	1.79*	
		High	.08	-.14	.05	2.68***	NS	2.27**	
Perseverance, Social Maturity	Personal Control, Intrinsic Motivation	Low	-.36	-.43	.04	NS	3.88***	4.65***	2.64**
		Med	.07	-.17	.02	2.31**	NS	1.82*	
		High	.34	.36	.39	NS	NS	NS	

* $p < .10$
** $p < .05$
*** $p < .01$

Children's social involvement was influenced by a significant interaction between preference for class with autonomy and the classroom emphasis on student expressiveness (also seen in Table 46). Children low in preference for autonomy were most socially involved in moderately expressive classrooms, those with moderate autonomy preference were most involved in highly expressive classrooms, and those with high preference for autonomy were most socially involved in classrooms at the two extremes of expressiveness.

The last interaction shown in Table 46 indicates a joint effect of emphasis on student expressiveness and children's personal control/intrinsic motivation on perseverance and social maturity. Children with low personal control scores persevere most in the most expressive classrooms, perhaps, as suggested with regard to some other interactions involving this and other variables, because such classrooms provide these children with the impetus and motivation which they generally cannot provide from within themselves; children with moderate scores on the personal control factor persevere most at the two extremes of classroom expressiveness, and those with high scores show no significant differentiation across levels of class expressiveness.

Table 47 presents the significant three-way interactions involving the same classroom factor ("emphasis on student expressiveness"), sex, and three different child variables, "personal control/intrinsic motivation," "preference for class with autonomy," and socioeconomic status. These interactions affected three outcome measures: "creativity," "value on equality," and "value on self-direction." Although it had been expected that classrooms characterized by an emphasis on student expressiveness and exploration would generally promote creativity, the interaction shown in this table represents the only instance in which these two variables were involved in a significant relationship. The main effect (shown in Table 33) was not significant; however the emphasis on expressiveness did form an important part of classroom cluster five, which obtained the highest creativity scores, as seen in Table 25. The interaction shown in the present table indicates that the relationship between these variables was mediated by the children's personal control/intrinsic motivation and by sex. The effect of classroom expressiveness was most pronounced for boys with low personal control (who were most creative in the most expressive classrooms), and for girls with high personal control (who were also most creative in the most expressive classrooms, but scored highly in the least expressive as well). The compensation mechanism proposed on several earlier occasions can again be suggested as a

Table 47

Means for Significant 3-Way Interactions Between Child Factors (plus SES), Sex, and Class Factor 6: "Emphasis on Student Expressiveness"

Dependent Variable	Child Variable	Sex, Levels	Levels of Class Var.			Between-Class-Level t Values			
			Low	Med	High	L vs M	L vs H	M vs H	F (4,94)
Creativity	Personal Control, Intrinsic Motivation	Boys							
		Low	-.39	-.31	.09	NS	7.87***	6.60***	2.78**
		Med	-.06	-.30	.00	3.84***	NS	4.86***	
		High	-.04	-.06	-.09	NS	NS	NS	
		Girls							
		Low	.03	-.07	.01	NS	NS	NS	
		Med	.02	.02	.08	NS	NS	NS	
		High	.17	-.06	.34	3.72***	2.85***	6.57***	
Value on Equality	Preference for Class with Autonomy	Boys							
		Low	-.07	-.05	-.03	NS	NS	NS	2.54**
		Med	.02	-.10	-.10	2.14**	2.21**	NS	
		High	-.17	-.05	-.15	2.18**	NS	1.84*	
		Girls							
		Low	.18	.00	.06	3.19***	2.18**	NS	
		Med	-.01	.21	.26	4.12***	5.07***	NS	
		High	.34	.07	.08	4.95***	4.69***	NS	
Value on Self-Direction	SES	Boys							
		Low	.00	.15	.04	3.86***	NS	2.85***	3.89***
		Med	.00	.13	-.05	3.57***	NS	4.66***	
		High	.02	-.07	.18	2.28**	4.31***	6.59***	
		Girls							
		Low	-.05	.22	-.14	6.94***	2.22**	9.15***	
		Med	-.15	-.11	.00	NS	3.90***	2.87***	
		High	-.08	.12	-.04	5.34***	NS	4.27***	

* $p < .10$
** $p < .05$
*** $p < .01$

possible explanation of the results obtained for the low personal control boys and for the high personal control girls in the relatively unexpressive classrooms. In the former case, the classroom emphasis may provide encouragement and direction to children who are unable to provide these for themselves; in the latter case, some of the girls who do have such inner resources may use them to develop directions not emphasized in their classrooms. A different explanation is required for the high personal control girls who scored very high on creativity in expressive classrooms; here an additive effect seems to be involved. The classroom atmosphere and their internal dispositions both would seem to impel them toward creativity, hence the highest scores for this combination. It is not clear, however, why the major effect of class expressiveness should occur for low-control boys and high-control girls.

In the next interaction shown in Table 47, relating class expressiveness, sex, and preference for autonomy to value on equality, the results for boys and girls are approximately the reverse of each other; cells which show high scores for girls show low scores for boys, and vice versa. The highest cell score for girls occurs for the combination of low class expressiveness and high autonomy-preference; the parallel cell shows the lowest mean score for boys. It will be remembered that preference for classrooms with autonomy also involves a preference for situations which provide children the opportunity for personal expression. Thus it was expected that children with higher scores on this preference would do better in the more expressive classrooms. For girls there is a trend in this direction for the low and moderate preference groups but a reversal for the high preference group (possibly again reflecting a compensation mechanism); for boys the differences are slighter, but to the degree that a trend exists it does show the expected direction between the moderate and high preference groups.

The last interaction shown in Table 47 reveals children's value on self direction to be generally highest for the moderately expressive classes, except for the high SES boys and the medium SES girls, who score highest in the most expressive classes. With the exception of the high SES girls, the trend generally shows high self-direction scores with increasing SES levels as the emphasis on student expressiveness also increases, perhaps indicating that higher SES children (especially boys) feel more comfortable with a greater emphasis on student expression.

Summary of Dimension by Dimension Interactions

In this summary we will organize the results just presented by each child variable, in sequence, and discuss some of the general trends which appear to be involved.

Children's preference for class with autonomy was involved in interactions with three classroom variables; control/orderliness, energetic encouragement of academic participation, and emphasis on student expressiveness. A compensation mechanism was suggested to account for the interactions with class control which affected self-esteem, self-direction, enjoyment of class, and achievement test performance (for boys). Children who stated that they preferred more structured situations scored higher on these variables in the less controlled, more permissive classrooms, while those preferring greater autonomy scored higher in the more controlled classrooms. It was suggested that experiencing a situation somewhat opposed to their self-perceived inclinations may have been beneficial for these children, perhaps because it required them to utilize modes of activity which they would otherwise avoid (disciplined orderliness for the autonomy-preferring children, self-direction, independence, etc. for the control-preferring children). With one other dependent variable, teacher-rated perseverance, there was some evidence of the reverse (or "matching") type of effect for girls; girls who preferred autonomy persevered best in the classes which most allowed for it, presumably because they felt most comfortable in such classes.

The other trends involved in the interactions obtained with children's preference for classrooms with autonomy were somewhat less clear, but were suggested to show some evidence of both the "compensation" mechanism (low autonomy-preference boys in the interaction with academic emphasis affecting self-esteem), and the "matching" mechanism (autonomy-preferring children persevering somewhat more in classrooms with less imposed academic emphases, structure-preferring girls showing greater self-esteem in classes with greater academic emphasis). Children's preference for autonomy also participated in two interactions with the classroom factor, "emphasis on student expressiveness." The first of these (relating to social involvement) was difficult to interpret, the second (relating to value on equality) generally showed a "matching" effect, where children with greater autonomy-preference (which also involves a preference for self-expression) scored highest in classes with greater emphasis on student expressiveness (with the exception of a reversal for the high-autonomy girls).

The student factor, compliant, conforming orientation, appeared in interactions with four of the classroom factors, warmth, control, commonality, and emphasis on academic participation. Focusing on the clearest of these, noncompliant children tended to be most creative, to persevere most, and to perceive least disruptiveness, in the most-controlled classrooms, again perhaps reflecting the "compensation" mechanism.

The two child factors which directly represented motivational dispositions, "personal control/intrinsic motivation" and "achievement motivation," were involved in the largest numbers of interactions with the classroom factors. In fact, each of them appeared in at least one significant interaction with each of the class dimensions. Boys scoring high on personal control/intrinsic motivation showed the greatest inquiry skill and value on self-direction in classes which were relatively warm and friendly, perhaps because these classes gave them more opportunity to explore their own intrinsic interests. Girls scoring high on personal control/intrinsic motivation persevered most in the least controlled, most permissive classrooms, presumably also because they were most free to explore their own interests and set their own directions in these classrooms.

With respect to class commonality of activities, a largely consistent set of interaction patterns was obtained, involving children's personal control. In general, higher scores on the affected outcome measures (creativity, enjoyment of class, activity/curiosity) were obtained by children with increasing levels of personal control/intrinsic motivation in classrooms with increasing levels of student-initiated, varied activities. Here again, a matching explanation seems to apply; children oriented toward following their own interests do best in classrooms in which they have the opportunity to initiate and carry out their own activities.

The interactions between children's personal control and individualization of teacher-student interaction were somewhat less clear; the most interpretable trend showed boys with low levels of personal control and intrinsic motivation to score highest on self-confidence in the most individualized classrooms (perhaps helping to supply them with an otherwise-lacking impetus and involvement).

The same child variable was involved in three interactions with energetic encouragement of academic participation, with effects on creativity, concern for others and inquiry skill. The clearest effects were obtained with creativity; high personal control children were most creative in classes with the least academic emphasis. It may be suggested that in such classes, children with the inclination were freer to develop skills in directions not strictly academic.

At the same time there was a trend for children scoring lowest on the personal control factor to show the highest creativity and perseverance scores in classrooms which most strongly emphasized student expressiveness (with the exception of girls with creativity). A "compensation" mechanism was again invoked here, suggesting that the classroom emphasis provides students the impetus which they are unable to provide for themselves.

Children's achievement motivation participated in three interactions with classroom warmth, affecting creativity, enjoyment of class and perceived class disruptiveness. Although creativity and enjoyment were generally greatest in the warmest and friendliest classrooms, this was especially pronounced for boys with low achievement motivation; here again it was suggested that the warmth of the classroom atmosphere helped to provide these boys some of the motivation in which they were relatively lacking. A somewhat similar mechanism was used to account for the finding that children low in achievement motivation obtained their highest inquiry skill and self-esteem scores in highly controlled and orderly classrooms (i.e., suggesting that the imposed direction and supervision in such classrooms were especially beneficial to children deficient in internal direction and motivation).

Interactions involving achievement motivation and individualization of teacher-student interaction indicated that self-esteem and writing quality (for boys) were generally highest for the relatively unmotivated children in the more individualized classrooms; such children perhaps are in greatest need of the encouragement and instruction provided by more intense interaction with the teacher.

Creativity scores were generally highest in classes with low levels of encouragement of academic participation; this was particularly true for low achievement-motivated boys and high achievement-motivated girls. Children's achievement motivation was also involved in three interactions with classroom emphasis on student expressiveness, affecting achievement test performance, value on equality and concern for others. One general trend showed the highly motivated children to score high in the classes with least emphasis on expressiveness (perhaps because they do not require the motivation and impetus of the more expressive classes) while the less motivated children did better in the more expressive classrooms (because they did require such external impetus).

A comparison of the results obtained in these analyses with the two motivation factors--achievement motivation and personal control/intrinsic motivation--with those obtained in the cluster by cluster analyses, is instructive. While the interactions involving achievement motivation were generally consistent with the proposed "compensation" mechanism, there was also some evidence of a "matching" mechanism with respect to its interactions with class control/orderliness. In addition, the results involving personal control/intrinsic motivation (and particularly those also involving the variety of student-initiated activities as the classroom factor) tended to be still more consistent with the "matching" mechanism. In the analyses with clusters, where these two motivational variables were contributing components, the results were interpreted as being largely consistent with the "compensation" mechanism. This perhaps indicates a value in including both these types of analysis. When combined into clusters, a composite of dimensions can show results which could not be predicted from knowledge of results with the individual dimensions alone. If the analyses were limited to the clusters, information about the effects of the individual factors would be obscured or lost.

Socioeconomic status participated in interactions with three classroom factors; warmth, encouragement of academic participation, and emphasis on student expressiveness. A general trend involving classroom warmth, which occurs in two-way interactions affecting value on equality and concern for others, and (for boys) in three-way interactions affecting achievement test performance, enjoyment of class, and self-esteem, is for high SES children to perform best in relatively "cold" classrooms and low SES children to do so in relatively "warm" ones. It was suggested that the low SES children may be helped to feel more comfortable and confident in the warmer and friendlier classes, while high SES children may prefer a more business-like approach. In the cases where the trend did not occur for girls, they generally performed better in the warmer classes at all SES levels.

SES was also involved in several interactions with energetic encouragement of academic participation; these related to self-esteem, self-confidence, self-direction, enjoyment of class and perseverance. In almost every instance in these interactions, high SES children obtained high scores on the dependent variables in the most academically oriented classrooms, while low SES children were somewhat mixed across levels of the class variable. It was suggested that high SES children may be more academically inclined, and therefore more consistently perform well in classes with a clear academic orientation.

A single interaction obtained between SES and emphasis on student expressiveness, influencing self-direction, suggested that high SES children (particularly boys) may also feel most comfortable in the more expressive classes.

Investigations of Cluster by Dimension Interactions

In addition to our analyses of the effects of interactions between child clusters and classroom clusters, and between child and classroom dimensions, we decided also to investigate "crossovers" between these means of grouping the data, to see how children characterized by particular attributes would perform in the different identified classroom "types," and how well each of the three "types" of children would perform in classrooms identified by positions on each of the six classroom dimensions. The summaries of these two sets of analyses are presented in Tables 65 and 66, Appendix A.

Interactions Between Child Factors and Classroom Clusters

Table 48 presents the significant two-way interactions obtained between the child factors and the classroom clusters (again limited to those which reached the .05 level of significance, or better).

Socioeconomic status was involved in two of these interactions, relating to self-esteem and to value on equality. Although neither of these showed significant differentiation between class types for the low SES children, their self-esteem scores were highest in class cluster one, the cluster combining extreme permissiveness, variety and self-initiation of activities, and moderate warmth. Children in the medium SES range showed highest self-esteem scores in the classroom cluster which combined warmth and friendliness with an emphasis on student expressiveness, while those in the high SES range scored highest on self-esteem in cluster four, combining warmth with substantial control and orderliness. It will be noted that all three of these classroom clusters were characterized by fairly substantial degrees of warmth; apparently warmth (which also showed a significant main effect by itself) is an important determinant of gains in self-esteem. But children at the different SES levels are influenced by warmth in different combinations; low

Table 48

Means for Significant 2-Way Interactions Between Child Factors and Classroom Clusters

Dependent Variable	Child Factor	Level	Classroom Cluster						F (10,88)	Between-Mean Difference Required For Significance ($p < .05$)
			One	Two	Three	Four	Five	Six		
Self-Esteem	SES	Low	-.16	-1.27	-1.22	-.80	-.51	-.82	2.35*	1.50
		Med	-1.32	-.35	.50	.41	1.72	-.31		
		High	.75	.84	.89	1.54	-1.21	.03		
Value on Equality	Achievement Motivation	Low	.02	-.03	.02	-.17	.08	-.14	1.94*	.23
		Med	.00	.23	-.15	.08	.14	-.09		
		High	-.04	-.02	.09	.18	-.19	-.04		
Value on Equality	SES	Low	.00	-.13	.02	-.02	.00	-.09	1.94*	.19
		Med	.00	.14	-.11	.01	.04	.11		
		High	-.07	.17	.01	.13	-.08	-.24		
Concern for Others	Personal Control, Intrinsic Motivation	Low	.07	-.20	-.12	-.22	.07	-.19	2.20*	.18
		Med	-.05	.08	-.04	-.04	-.03	-.09		
		High	.06	.14	.13	.21	.11	.29		
Concern for Others	Achievement Motivation	Low	-.02	.04	-.17	-.32	.20	-.19	2.47*	.19
		Med	.11	-.05	-.11	.07	.02	.03		
		High	.04	.11	.08	.19	.14	.20		
Value on Self-Direction	Preference for Class with Autonomy	Low	.05	-.12	.00	-.04	-.04	.04	2.25*	.20
		Med	.05	-.16	.14	-.08	-.04	-.13		
		High	.12	.28	-.13	.10	.07	.19		

* $p < .05$

SES children, perhaps benefiting from the opportunity to learn that they can be effectively self-directing, come to think best of themselves when given the greatest autonomy; high SES children, perhaps appreciating a serious approach to academic tasks, show highest self-esteem in orderly, disciplined classrooms which de-emphasize student expression. Perhaps the most puzzling group shown in this interaction is the middle SES one, which does best with a strong emphasis on student expression. While this is not surprising in itself, the discrepancy between the results for this group and those for the two SES extremes is difficult to explain.

With respect to value on equality, both the medium and the high SES groups scored highest in class cluster two, while low SES children obtained their lowest mean score in the same cluster. Classrooms in cluster two can be said to demonstrate a type of interpersonal equality. Since there is both teacher control and direction and student self-initiation of activities, this may amount in many of these classes to an effective sharing of control between teacher and students, a kind of equality of role. Students may be reflecting this role equality in their high gain scores for value on equality. The absence of this effect for the low SES children may indicate that they prefer a clearer or simpler role structure, emphasizing either one or the other type of control rather than a combination.

Children's achievement motivation was also involved in two of the interactions shown in Table 48, relating to value on equality and to concern for others residual scores. Although the results for the moderate achievement motivation group were different in these two interactions (with highest scores in cluster two for value on equality and in cluster one for concern for others), they were similar across the two for the low and high motivation groups. Children with low achievement motivation scored highest in both instances in class cluster five (the warm and expressive class type), while those with high achievement motivation obtained high scores in class cluster four (warm, controlled, orderly). As we have suggested earlier, it may be that children with low achievement motivation acquire an external substitute for their (relatively) missing internal motivation in a classroom which provides for open expression of a variety of personal interests in a warm and friendly setting, while children who are already motivated prefer a situation which allows them to apply their motivation in an orderly way.

Concern for others was also influenced by an interaction involving children's personal control/intrinsic motivation. As in the interaction with achievement motivation, the low group of children scored high in class cluster five (but also did so in cluster one). Children with moderate personal control scores showed greatest concern for others in cluster two (combining the two types of classroom control mentioned above); while those with high personal control scores obtained the highest concern for others scores in cluster six, the class type which combined individualization of teacher-student interaction with encouragement of academic participation.

The last interaction shown in Table 48 represents the joint effect of children's preference for class with autonomy and classroom cluster on value on self-direction. Children lowest in autonomy-preference obtained their highest self-direction scores in class cluster one; since these children were not themselves inclined toward self-direction, it may be that the classes most strongly oriented in this direction (combining student autonomy and freedom from control with student self-initiation of tasks and activities) helped them to overcome their initial disinclination (they also, however, performed about equivalently in cluster six, individualized and academic). The moderate autonomy group obtained highest self-direction scores in class cluster three, which tended toward permissiveness and some student autonomy, but not self-initiation of tasks. Children with the strongest preference for autonomy stated the highest value on self-direction in the cluster two classrooms, which combined control and orderliness with student initiation of varied activities.

Each of the preference levels, then, showed high self-direction scores in classrooms which provided for at least some type of student autonomy.

Three-way interactions involving the child factors (plus SES), the classroom clusters, and sex are shown in Table 49. Four significant interactions were obtained, two of them involving preference for class with autonomy. The first of these, relating to children's achievement test performance, shows generally highest scores for class cluster four (warm and controlled). Exceptions to this trend are found for boys with moderate preference for autonomy (who did well in clusters two and five), and low-preference girls (who excelled in cluster two). Moderate-preference girls also did well in cluster five classrooms. The highest mean scores in the significant main effect obtained with achievement test performance were found in clusters two and four; the present results necessitate the qualification of this finding according to the child's degree of preference for autonomy. Thus it is the girls with low scores for this preference, and the boys with moderate scores, who apparently benefited from a (cluster two) class situation in which they were expected to provide at least some of their own directions (but still in a controlled and orderly context).

The interaction affecting class disruptiveness (also with preference for class with autonomy as an independent variable) similarly shows results consistent with the obtained main effect, with the exception of two groups--high autonomy-preference boys and moderate autonomy-preference girls. They perceive most disruptiveness in the most permissive classrooms (cluster one) while the other groupings perceive it in the most hostile and unfriendly classrooms (cluster three).

Inquiry skill shows a significant effect in this table, with socioeconomic status the interacting child variable. As with achievement test performance, inquiry skill scores were generally highest in the warm, controlled and orderly classrooms (cluster four), with the exception of high SES boys, who did best in the warm and expressive classrooms (cluster five). The warm and expressive classrooms also

Table 49

Means for Significant 3-Way Interactions Between Child Factors, Sex, and Classroom Clusters

Dependent Variable	Child Factor	Sex, Level	Classroom Cluster						F (10,88)	Between-Mean Difference Required For Significance ($p < .05$)
			One	Two	Three	Four	Five	Six		
Achievement Test Performance	Preference for Class with Autonomy	Boys								
		Low	-.01	-.07	.00	.20	-.06	-.01	2.38*	.09
		Med	-.10	.22	-.16	-.06	.18	-.11		
		High	-.24	.01	-.01	.13	.04	-.03		
		Girls								
		Low	-.01	.17	.07	.13	.03	.01		
		Med	-.20	.13	-.03	.20	.18	.00		
		High	.16	.15	-.05	.23	-.05	-.10		
Inquiry Skill	SES	Boys								
		Low	-.05	-.05	-.32	-.01	-.38	-.22	2.19*	.20
		Med	-.29	.08	-.01	.13	.12	-.09		
		High	-.25	.17	-.08	.10	.40	.24		
		Girls								
		Low	-.59	-.05	.04	.16	.11	-.14		
		Med	.08	.02	.10	.46	-.33	.19		
		High	.13	.06	-.04	.33	-.13	-.06		
Perceived Class Disruptiveness	Preference for Class with Autonomy	Boys								
		Low	-.02	.01	.16	-.22	-.37	-.03	2.08*	.12
		Med	-.23	.02	.21	-.01	-.08	.12		
		High	.11	.02	-.02	-.10	-.31	-.03		
		Girls								
		Low	-.06	-.12	.19	-.13	-.15	-.16		
		Med	.11	-.08	.07	-.09	.00	-.05		
		High	-.06	-.26	.26	-.14	-.17	.29		

Table 49 (continued)

Means for Significant 3-Way Interactions Between Child Factors, Sex, and Classroom Clusters

Dependent Variable	Child Factor	Sex, Level	Classroom Cluster						F (10,88)	Between-Mean Difference Required For Significance ($p < .05$)
			One	Two	Three	Four	Five	Six		
Persever-ence, Social Maturity	Achieve-ment Motiva-tion	Boys								
		Low	-.15	-.13	-.65	-.08	.50	-.46	3.21**	.21
		Med	-.14	-.21	-.16	.08	.17	-.45		
		High	-.57	-.19	-.38	-.04	-.29	.14		
		Girls								
		Low	.14	.20	-.04	.00	-.28	.04		
		Med	.46	.17	.07	.39	.81	.24		
		High	.39	.43	.34	.54	.74	-.01		

* $p < .05$

** $p < .01$

generally produced the greatest perseverance in the children as shown in the interaction involving achievement motivation. Their striving behavior was apparently stimulated by this combination of characteristics, particularly for boys with low achievement motivation (where it was perhaps providing an external substitute for motivation) and for girls with moderate or high achievement motivation (where it perhaps increased already high motivation with an additive-type effect). The exceptions occurred for high achievement-motivated boys, who persevered most in the classrooms which combined individualized interaction with an academic emphasis, and for low achievement-motivated girls, who persevered most in the most controlled and orderly classrooms (but also did fairly well in the cluster one classrooms).

Interactions Between Child Clusters and Classroom Factors

Table 50 presents the means and significance levels for those child cluster by classroom factor interactions which achieved the .05 level of significance or better. Only two classroom factors were involved in these effects--control/orderliness and emphasis on student expressiveness. Classroom control/orderliness is involved in two interactions, influencing activity/curiosity and creativity. Children in cluster one (low in prior achievement, cognitive skills and self-esteem, high in compliance) scored their highest on both these outcome measures in the most permissive classrooms (only significantly so for activity, however), perhaps because they felt more at ease and stimulated in classrooms which were relatively undemanding, highly active, and required students to be self-directing. The high-achieving and motivated children of cluster two performed best with respect to both variables in the most controlled, orderly and organized classrooms (but only significantly so for creativity). We would suggest that in contrast to the cluster one children, who were perhaps supplied with missing motivation by classroom permissiveness, these children, already well-motivated, may have appreciated and been helped by the orderliness and discipline provided by the more controlled classrooms. They were enabled to advance from an already high level of creativity by a structured and orderly approach to tasks which gave more emphasis to development of content than to stimulation of students. The cluster three children, who were noncompliant and preferred autonomy and self-direction, were most active and curious in the classrooms which provided for the most autonomy, as would be expected; their creativity, however, was most benefited by the more controlled and orderly classrooms. As was suggested in a different context earlier, it is possible that their inclination toward autonomy had to be tempered by a setting which supplied external structure and direction in order to achieve an optimal balance.

Classroom emphasis on student expressiveness participated in three interactions, shown in Table 50, influencing creativity, self-esteem, and perceived class disruptive-

Table 50

Means for Significant 2-Way Interactions Between Child Clusters and Classroom Factors

Dependent Variable	Classroom Factor	Person Cluster	Levels of Class Var.			Between-Class-Level t Values			
			Low	Med	High	L vs M	L vs H	M vs H	F (4,94 df)
Activity, Curiosity	Control	One	.01	-.38	-.45	4.19***	5.04***	NS	3.38**
		Two	.20	.20	.25	NS	NS	NS	
		Three	.31	.10	-.09	2.35**	4.33***	1.98**	
Creativity	Control	One	-.09	-.20	-.13	NS	NS	NS	6.14***
		Two	-.08	.16	.26	2.30**	3.23***	NS	
		Three	-.36	.12	.47	4.58***	7.93***	3.35***	
Perceived Disruptiveness	Emph. on S. Exprness.	One	.02	.00	.12	NS	NS	1.66*	3.00**
		Two	.02	.02	-.18	NS	2.90***	2.92***	
		Three	-.05	.13	-.01	2.55**	NS	1.95*	
Creativity	Emph. on S. Exprness.	One	-.26	-.09	-.07	NS	1.69*	NS	3.38**
		Two	.11	.05	.16	NS	NS	NS	
		Three	.29	-.23	.14	4.71***	NS	3.37***	
Self-Esteem	Emph. on S. Exprness.	One	-1.86	.16	-1.07	2.71***	NS	1.65*	2.76**
		Two	.62	.06	.84	NS	NS	NS	
		Three	1.00	.31	-1.36	NS	3.18***	2.25**	

* $p < .10$
** $p < .05$
*** $p < .01$

ness. The low achieving, etc. (cluster one) children were most creative, but also saw most disruptiveness, in the most expressive classrooms, perhaps again reflecting the provision of a motivating factor to those who need it. The high achieving, etc. (cluster two) children were not significantly differentiated across levels of class expressiveness for creativity or self-esteem, but saw most disruptiveness in the least expressive classes. The autonomous, etc. (cluster three) children scored highest on creativity and self-esteem in the least expressive classrooms, although their creativity scores in the most expressive classrooms were also high (not significantly different from those in the least expressive). They saw most disruptiveness in the moderately expressive classrooms. Included with the preference for autonomy of the cluster three children is a preference for situations which allow self-expression. One would therefore expect them to excel in the most expressive classrooms (and their creativity scores are quite high in these). Perhaps, however, the inclination toward self-expression, when combined with an expressive classroom, surpasses an optimal level of expressiveness for many of these children, who therefore are more creative, and think better of themselves, in situations where this individual inclination is counterbalanced by a class situation with an opposed emphasis.

Three-way interactions between the child clusters, classroom factors, and sex are presented in Table 51. There were five significant interactions, involving four of the classroom factors. The first one shown in the table relates classroom control and orderliness, with the other independent variables, to children's value on self-direction. With the exception of those in cluster one, for whom there was no significant differentiation, boys stated the highest residual values on self-direction in the classes which provided for the greatest amount of self-direction, those at the low end of the control/orderliness dimension. Low achieving (cluster one) girls also score high on self-direction in these classrooms, while those in cluster two show no significant differentiation, and those in cluster three score highest in the most controlled classrooms. It is interesting that girls who are initially inclined toward self-direction show the greatest gains in situations which do not provide for much of it, while boys with such inclinations gain most when given the opportunity to express and follow them.

The next significant interaction shown in Table 51 included "commonality vs. variety of class activities" as an independent variable; the effects in this analysis also appeared to be quite different between the sexes. Cluster one (low achieving, etc.) boys were most active and curious in moderately varied classrooms, while cluster

Table 51

Means for Significant 3-Way Interactions Between Child Clusters, Sex, and Classroom Factors

Dependent Variable	Classroom Factor	Sex, Child Cluster	Levels of Class Var.			Between-Class-Level t Values			F (4,94 df)
			Low	Med	High	L vs M	L vs H	M vs H	
Value on Self-Direction	Control, Orderliness	Boys							
		One	.01	-.02	.02	NS	NS	NS	2.86**
		Two	.17	-.02	.07	3.91***	1.98**	1.93*	
		Three	.28	.10	.01	3.66***	5.57***	1.91*	
		Girls							
		One	.07	-.15	-.14	4.[illegible]***	4.42***	NS	
		Two	-.01	-.01	-.07	NS	NS	NS	
		Three	.03	-.03	.24	NS	4.44***	5.63***	
Activity, Curiosity	Commonality Vs. Variety	Boys							
		One	-.07	.03	-.19	NS	1.99**	3.52***	2.96**
		Two	.26	.33	.50	NS	3.73***	2.65***	
		Three	.48	.34	.22	2.12**	4.01***	1.89*	
		Girls							
		One	-.53	-.65	-.22	1.97**	4.74***	6.71***	
		Two	.22	-.02	.02	3.76***	3.21***	NS	
		Three	-.16	-.23	-.03	NS	1.94*	3.07***	
Writing Quality	Non-individualised Interaction	Boys							
		One	-.22	-.80	-.43	5.92***	2.15**	3.77***	2.47**
		Two	-.03	-.04	-.01	NS	NS	NS	
		Three	.22	.31	.00	NS	2.24**	3.21***	
		Girls							
		One	.07	-.27	-.15	3.42***	2.23**	NS	
		Two	.75	.43	.24	3.29***	5.17***	1.88*	
		Three	.39	-.16	.49	5.57***	NS	6.58***	
Value on Self-Direction	Non-individualized Interaction	Boys							
		One	-.01	.08	-.05	1.92*	NS	2.74***	2.54**
		Two	.18	.06	-.02	2.60**	4.16***	NS	
		Three	.09	.09	.20	NS	2.24**	2.12**	
		Girls							
		One	-.17	-.13	.08	NS	5.08***	4.37***	
		Two	.08	-.10	-.08	3.64***	3.25***	NS	
		Three	.12	.20	-.06	NS	3.66***	5.27***	
Value on Equality	Encouragement of Academic Participation	Boys							
		One	-.16	-.17	-.29	NS	2.40**	2.20**	2.60**
		Two	.00	.01	.07	NS	NS	NS	
		Three	.05	-.07	.01	2.12**	NS	NS	
		Girls							
		One	.09	-.25	.10	6.05***	NS	6.23***	
		Two	.28	.20	.11	NS	2.97***	NS	
		Three	.16	.32	.11	2.80***	NS	3.81***	

*p <.10, **p <.05, ***p <.01

one girls were in the least varied classrooms. Activity/curiosity scores were also at high points for high achieving (cluster two) boys and for autonomy-preferring (cluster three) girls in the most common (least varied) classrooms, and for high achieving girls and autonomy-preferring boys in the classrooms with most student-initiated, varied activities. The results obtained here for the cluster three (non-compliant, autonomy-preferring, self-directing) children are somewhat similar to those obtained in the first analysis presented in this table. Although the classroom factors are different, they both refer to aspects of student autonomy. In each case the boys score highest on the dependent variable in the classes which provide for the greatest student autonomy while girls in this cluster do so in classes with the least.

The degree of individualization of teacher-student interaction constitutes the classroom variable involved in the next two interactions shown in Table 51. In the first of these, affecting residual writing quality, scores are generally highest in the most individualized classes, with the exception of cluster three (autonomy preference, etc.) boys, whose scores are slightly (but nonsignificantly) higher in intermediate-level classrooms, and cluster three girls, whose scores are higher (also nonsignificantly) in the least individualized classrooms. In addition, no significant differentiation was obtained for the cluster two boys. The spreading out of the high means for the more autonomous children may indicate that this orientation represents, at least for some of them, a desire not to be given advice or direction. They may do relatively well in the less individualized classrooms because they are not given such advice and direction. At the same time, they also do well in the individualized classrooms because the teacher-student interaction observed in these classrooms was often initiated by the students (this can be seen in the loadings for this factor, shown in Tables 4 and 9).

The interaction in which individualization relates to value on self-direction shows a somewhat different pattern. The high achieving, etc. (cluster two) children score highest in the most individualized classrooms (similar to the effect for girls on writing quality). The autonomous, etc. (cluster three) girls show the strongest value on self-direction in moderately or highly individualized classrooms, while the boys in the same cluster do so in the least individualized classrooms. It may be that boys who prefer autonomy feel most self-directing in situations which allow them to be "on their own," but that girls who prefer autonomy develop a value on self-direction if they have frequent feedback from and consultation with teachers concerning their activities. (Girls' greater social orientation has been frequently noted in previous research; this suggests that even the self-direction of those preferring autonomy may take a more social flavor for girls than for boys). Low achieving, etc. (cluster one) girls show the greatest residual gains in value on self-direction in the least individualized classes (although their writing was best in individualized ones), a finding difficult to explain. The cluster one boys show greatest self-direction in moderately individualized classrooms.

The last interaction portrayed in Table 51 is a three-way one involving energetic encouragement of academic participation, child cluster, and sex, with the residual value on equality as the dependent variable. Low achieving, etc. (cluster one) boys show the greatest value on equality in classes low or moderate in academic participation, possibly because these classes allow nonacademic objectives to assume importance. In fact, classrooms in the lowest academic emphasis category generally produced the highest value on equality scores; with autonomy-preferring girls (who scored higher in moderate-level classes) and low-achieving girls (who showed high scores at both extremes of the academic emphasis dimension) the major exceptions.

Summary of Cluster by Dimension Interactions

Child dimension by classroom cluster interactions. All of the child dimensions but compliant orientation were involved in interactions with the classroom clusters. We will here summarize what appear to be the major trends in these effects, focusing on differences between the highest and lowest scoring child groups for each dimension.

Children of low socioeconomic status did their best (in terms of self-esteem) in the more permissive classrooms, while high SES children did so in the warm, controlled, and orderly cluster (four).

Children in the low achievement motivation group generally obtained highest outcome scores (value on equality, concern for others, perseverance) in class cluster five, combining warmth with an emphasis on expressiveness; those in the high achievement motivation group obtained high scores (for the first two of these variables) in cluster four classrooms, which combined warmth with control and orderliness.

Personal control appeared in a single interaction; children with low personal control scores showed the greatest concern for others in warm and expressive classrooms (cluster five), while those with high scores did so in individualized and academic classrooms (cluster six).

Children who stated a preference for structured situations obtained highest scores on self-direction in permissive or individualized settings, and on achievement test performance in class situations characterized by control and orderliness (as represented in clusters two and four); the common element describing the class clusters in which children preferring autonomy generally did well for both of these outcomes was also control and orderliness.

It will be noted that for most of the child dimension interactions just summarized, low scorers tended to do well in types of classes which provided activities and atmospheres perhaps functioning to engage the students' involvement, interest and motivation (i.e., those including permissiveness, warmth, expressiveness, student initiation of varied activities), while high scorers tended to do best, in most instances, in classes whose most consistent characteristic was a controlled and orderly approach to tasks. The general explanation which has been used to account for these findings (as well as several others in earlier sections) is that the low-motivated children are being provided with an external substitute for the motivation which they lack internally, while the highly-motivated children, not requiring additional motivation, are being provided with the structure and orderliness which helps them to progress from their initial level of accomplishment. While this explanation appears reasonable for the motivation factors and for SES (shown to be correlated with these factors in Appendix A), it fits less well the results obtained with the autonomy-preference factor. For these it was suggested that children may benefit from experiencing a type of situation which their inclinations would lead them to avoid.

Classroom dimension by child cluster interactions. Processes similar to those just discussed were also evident in the interactions involving the classroom dimensions and the child clusters, shown in Tables 50 and 51. Children in the first cluster, with low scores on measures of prior achievement and cognitive skills, low prior self-esteem, low personal control/intrinsic motivation, and high compliance orientation scores, were more active/curious, creative, and self-directing (girls only) in classes which were highly permissive and provided for student autonomy. They were also creative in classes which strongly emphasized student expressiveness (but also saw the most disruptiveness in these classes), and showed greatest self-esteem gains in the moderately expressive classes. Children in this cluster were also active/curious in classes characterized by moderate (for boys) or low (for girls) levels of student-initiated, varied activities, and showed the best writing quality in classes with the most individualized teacher-student interaction. Results were more mixed with respect to encouragement of academic participation. Boys' value on equality was highest in classes low or moderate on this dimension; girls' in those either high or low.

The cluster two children, highly motivated prior achievers with high scores on initial measures of self-esteem, cognitive skills, and preference for structure, scored highest in the most controlled and orderly classes on the residual measures of activity/curiosity and creativity (the boys were also most self-directing in the least controlled classes, however). They perceived least disruptiveness in the classes which most strongly emphasized student expressiveness. Their self-direction and writing quality (girls only) showed highest scores in the most individualized classrooms. Results for class commonality vs. variety of activities were mixed. Cluster two boys were most active in classes showing the most commonality of activities, girls in those showing the least. Cluster two girls also obtained the highest value on equality scores in classes with the least emphasis on academic participation.

Children in the third cluster were noncompliant, strongly preferred classes which allowed for autonomy and self-expression, had moderate scores on prior cognitive skills, and moderate-to-low scores on the motivational measures. While a "matching" hypothesis would have led us to expect them to do well in classes which were permissive, emphasized expressiveness, and had many student-initiated activities, the results obtained, while showing some evidence of such effects, also showed the opposite in several instances. Thus, while cluster three children's activity/curiosity and boys' value on self-direction were highest in permissive classrooms, and boys' activity/curiosity was highest in the most varied classrooms, creativity and girls' self-direction were highest in the most controlled classrooms, creativity and self-esteem were greatest in the least expressive classrooms, and girls' activity/curiosity was most prevalent in the least varied classrooms. Several of these show a distinction between activity level (which is usually greatest when the classroom matches the predominant orientation of this child cluster) and creativity (maximized in classes which oppose the predominant cluster orientation). It may be suggested that for these noncompliant children, preferring self-direction, etc., a matching environment allows them to feel free to be active and to explore, but does not provide them with sufficient structure to develop this activity in productive directions. An environment which tempers or counteracts these inclinations by providing more structure and direction may promote greater development of cognitive skills (represented in these instances by creativity).

The remaining interactions produced more mixed results for the children in this cluster. Boys' writing quality and girls' self-direction were greatest in highly or moderately individualized classrooms, girls' writing quality was greatest in classes at both extremes of individualization, boys' self-direction was greatest in the least individualized classes, boys' value on equality was greatest in classes with low, and girls' in those with moderate emphasis on academic participation.

Thus again there is evidence that low achieving, relatively unmotivated children benefit from class environments which provide them with external stimulation and encouragement; that high achieving, motivated children benefit from those which provide them with control, structure, and an orderly approach to tasks; and that children preferring autonomy show greatest cognitive benefits in classrooms which require them to experience relatively high levels of external control and structure.

Investigations of Interactions Involving Children's Initial Status on Selected Achievement-Related Measures

A final set of analyses explored the possibility that children at different initial levels of proficiency with regard to specific cognitive skills would show maximal gains in those skills in different types of classrooms. Seven cognitive skills measures were selected for these analyses: reading, mathematics concepts, mathematics problems, achievement test performance, creativity, inquiry skill, and writing quality. The first three of these were achievement test subscores, the next three factor scores. The same repeated-measures analysis of variance procedure described earlier was also used for these analyses. The independent variables for each analysis were a trichotomized prior skill measure, a classroom variable, and sex; the dependent variable for each was the post-test score parallel to the pre-test measure included in that analysis. For the three achievement test subscores, the closest parallels were selected between the prior achievement test (ITBS) and the achievement test used for the final assessment (CAT). Cutting points used in trichotomizing the prior achievement test subscores are shown in Table 69, Appendix A. Two groups of these analyses were run, one involving the classroom clusters, the other, the classroom dimensions.

A summary of the results of the analyses using classroom cluster as an independent variable is presented in Table 67, Appendix A. Results of the analyses with the individual classroom dimensions are summarized in Table 63, Appendix A. It will be noted that in each of these tables the F values under the "child variable" column are all extremely large and highly significant. Since in each case the "child variable" represents the initial cognitive skill measure, these effects merely indicate that pre-test scores relate to post-test scores, a finding of no particular interest. It is only the interactions which involve child prior status and classroom measures which are of significance from these analyses. The .10 level was used as the minimal acceptable significance level for these analyses.

From the seven analyses involving the classroom clusters, only one significant prior-status by cluster interaction was obtained. The means comprising this interaction are presented in Table 52. It shows children's reading achievement to have benefited from different classroom environments differentially for children with different initial levels of reading skill. Although children from all starting points did relatively well in class cluster two (the cluster which combined control and orderliness with student self-initiation of varied tasks), the initially poor readers showed the highest mean score in cluster six, representing classes which were individualized and which strongly encouraged academic participation; the initially proficient readers obtained mean scores nearly as high as that for cluster two in clusters one and four (all three of these characterized by relatively high levels of student self-initiation of varied activities, and two of them characterized by control and orderliness). The initially poor readers perhaps were stimulated and motivated by the individualized attention and the energetic and flamboyant teacher encouragement of participation characteristic of cluster six, while the proficient readers, not requiring additional motivation, benefit from the opportunity to select topics and activities and from the provision of an orderly and structured approach to these activities.

The significant two-way interactions obtained with classroom dimensions as independent variables are presented in Table 53. Both of these involved classroom control and orderliness as the classroom independent variable. The first, affecting reading comprehension, shows a tendency somewhat similar to that suggested in the analysis involving the classroom clusters. The initially poor readers, although not significantly differentiated across levels of the class variable, show highest reading scores in the least controlled (most permissive) classrooms, but also show scores only slightly (and nonsignificantly) lower in the high-control classes. At

Table 52

Fourth-Grade Reading Comprehension Means for Interaction Between Classroom Clusters and Prior Reading Level

Prior Reading Level	Classroom Cluster						F (10,88)	Between-mean Difference Required for Significance (p < .05)
	One	Two	Three	Four	Five	Six		
Low	18.47	19.76	18.38	19.00	19.30	20.86	2.11*	2.18
Med	24.41	25.80	24.02	24.40	22.63	21.47		
High	32.78	32.85	31.50	32.55	29.92	28.43		

* $p < .05$

the same time, the moderately and highly proficient readers did clearly best in the most controlled and orderly classrooms. The same independent variables were also involved in a three-way interaction affecting reading comprehension, shown in Table 54. The tendency described above is here shown quite clearly for boys; those with initially low, medium, and high reading levels show the highest final reading comprehension scores in classrooms with, respectively, low, medium, and high levels of control and orderliness. The relationship for the low prior status boys is also U-shaped, with only slightly lower scores for the high control classes than for the low control ones. The results for girls show no significant differentiation for the poor readers (but with the highest mean for the moderately controlled classes) and best reading scores in highly controlled classes for the moderately and highly proficient readers; thus the trend, although considerably weaker, suggests a similar direction of effect.

The second interaction shown in Table 53 demonstrates the joint effect of class control/orderliness and prior inquiry skill on the final measure of inquiry

Table 53

Means for Significant 2-Way Interactions Between Classroom Factors and Specific Prior Status Measures on Parallel Outcome Measures

Dependent Variable	Prior Status Variable	Pre-Level	Class Variable and Levels			Between-Class-Level t Values			F (4,94)
						L vs M	L vs H	M vs H	
			Control, Order						
			Low	Med	High				
Reading Comprehension	Reading	Low	19.59	18.74	19.34	NS	NS	NS	2.78**
		Med	22.28	23.88	25.80	2.09**	4.58***	2.49**	
		High	29.79	31.82	33.12	2.64***	4.34***	1.70*	
			Control, Order						
			Low	Med	High				
Inquiry Skill	Pre-Inquiry	Low	-.30	-.50	.00	2.08**	3.04***	5.12***	2.18*
		Med	-.17	-.18	.14	NS	3.23***	3.35***	
		High	.26	.38	.40	NS	NS	NS	

* $p < .10$
** $p < .05$
*** $p < .01$

skill. Although the most controlled and orderly classrooms show the highest inquiry scores for each of the initial status levels, the differentiation is not significant for those at the highest initial status. This does not add useful information beyond that shown by the significant main effect, in Table 33.

One additional interaction involving class control/orderliness is shown in Table 54. Girls at each initial arithmetic concepts status level demonstrate the best post-test understanding of mathematics concepts in the most controlled and orderly classrooms. Boys obtained relatively high mathematics concepts scores in highly controlled classrooms when in the low and high pre-status groups; however, the moderate and low status groups scored the highest in the most permissive classrooms. The low status boys show a U-shaped trend quite similar to that shown with the reading scores.

Table 54

Means for Significant 3-Way Interactions Between Classroom Factors, Sex, and Specific Prior Status Measures on Parallel Outcome Measures

Dependent Variable	Prior Status Variable	Sex, Pre-Level	Class Variable and Levels			Between-Class-Level *t* Values			**F** (4,94)
						L vs M	L vs H	M vs H	
			Control, Order						
			Low	Med	High				
Reading Comprehension	Pre-Reading	**Boys**							
		Low	19.58	17.74	19.04	3.51***	NS	2.49**	2.26*
		Med	21.03	24.81	24.33	7.22***	6.29***	NS	
		High	30.22	32.57	34.13	4.48***	7.46***	2.98***	
		Girls							
		Low	19.60	19.75	19.63	NS	NS	NS	
		Med	23.54	22.96	27.26	NS	7.11***	8.21***	
		High	29.37	31.07	32.12	3.25***	5.25***	2.00**	
			Control, Order						
			Low	Med	High				
Mathematics Concepts	Pre-Arithmetic Concepts	**Boys**							
		Low	13.91	11.13	13.66	9.18***	NS	8.33***	2.40*
		Med	15.93	15.55	15.32	NS	1.99**	NS	
		High	18.20	18.11	20.24	NS	6.72***	7.02***	
		Girls							
		Low	12.75	13.28	14.17	1.74*	4.69***	2.91***	
		Med	16.31	17.17	17.88	2.85***	5.17***	2.32**	
		High	18.64	19.13	19.39	NS	2.46**	NS	
			Non-individualized						
			Low	Med	High				
Reading Comprehension	Pre-Reading	**Boys**							
		Low	19.34	17.45	19.55	3.79***	NS	4.21***	4.80***
		Med	20.20	24.95	25.03	9.51***	9.67***	NS	
		High	32.31	32.15	32.42	NS	NS	NS	
		Girls							
		Low	17.93	18.87	22.13	1.88*	8.41***	6.52***	
		Med	25.22	24.09	24.51	2.25**	NS	NS	
		High	30.80	30.73	31.02	NS	NS	NS	
			Non-individualized						
			Low	Med	High				
Mathematics Concepts	Pre-Arithmetic Concepts	**Boys**							
		Low	13.12	11.87	13.75	4.13***	2.10**	6.24***	2.74**
		Med	14.67	15.82	16.32	3.80***	5.47***	1.67*	
		High	18.79	19.55	18.30	2.50**	NS	4.14***	
		Girls							
		Low	12.84	13.68	13.71	2.78***	2.90***	NS	
		Med	17.36	17.10	16.89	NS	NS	NS	
		High	18.94	18.92	19.28	NS	NS	NS	

Table 54 (continued)

Means for Significant 3-Way Interactions Between Classroom Factors, Sex, and Specific Prior Status Measures on Parallel Outcome Measures

Dependent Variable	Prior Status Variable	Sex, Pre-Level	Class Variable and Levels			Between-class-Level t Values			F (4,94)
						L vs M	L vs H	M vs H	
			Non-individualized interaction						
Overall Achievement Test Performance	Prior Achievement		Low	Med	High				
		Boys							
		Low	-.89	-.96	-.77	NS	2.40**	3.97***	2.09*
		Med	-.25	.06	.00	6.63***	5.25***	NS	
		High	.83	.87	.77	NS	NS	2.11**	
		Girls							
		Low	-.80	-.70	-.74	2.18**	NS	NS	
		Med	.19	.11	.19	1.72*	NS	1.78*	
		High	.87	.76	.88	2.44**	NS	2.62**	
			Enc. Student Expressiveness						
Writing Quality	Pre-Writing Quality		Low	Med	High				
		Boys							
		Low	4.67	4.70	4.63	NS	NS	NS	2.11*
		Med	5.56	5.06	5.94	4.06***	3.04***	7.10***	
		High	6.13	5.99	6.38	NS	2.03**	3.20***	
		Girls							
		Low	5.32	4.86	5.48	3.80***	NS	5.06***	
		Med	5.76	5.99	5.95	1.90*	NS	NS	
		High	6.70	6.30	6.57	3.27***	NS	2.20**	

* $p < .10$
** $p < .05$
*** $p < .01$

Individualization of teacher-student interaction is involved in three of the interactions presented in Table 54, influencing reading comprehension, mathematics concepts and achievement test performance. For the first two of these, low initial status boys show high scores in classes at the two extremes of individualization. Moderate status boys do relatively well in reading in nonindividualized classes, while high status boys obtain high reading scores in classes at all levels of individualization. Moderate and high math status boys obtained their highest final scores in, respectively, nonindividualized and moderately individualized classrooms. Low initial status girls scored highest, with both of these outcomes, in nonindividualized classes; moderate status girls did best in individualized classes; and the other groups of girls showed no significant differentiation. Higher initial status boys showed a relatively greater tendency to benefit from individualized classes than lower status boys, with respect to overall achievement test performance. The same was not found for girls. Thus the general trend, with regard to these classroom variables, was for low status boys to do well in classes at the two extremes of each (with a slight edge for the low control, and the nonindividualized levels), and for low status girls to do well in classes which were relatively controlled and relatively nonindividualized; while higher status children of both sexes did well in controlled classes, but showed mixed results regarding the optimal level of individualization (with a slight trend for higher status children to do best with greater degrees of individualization).

The results involving control are similar to some of those which have been described in earlier sections of this report, showing unmotivated or unproficient children obtaining benefits relating to both extremes of the control dimension, in different instances, while more highly motivated or proficient children generally benefited from classrooms with high levels of control and orderliness. It may be that for some of the low-initial status children, with motivational lacks, a permissive and varied setting is optimal, while for others, who perhaps lack the ability to apply themselves to tasks in a disciplined and orderly way, an environment which provides for this lack may be best.

The results showing a similar U-shaped relationship with degree of individualization for low-status boys may also reflect relevance to different sets of needs. Those whose need is primarily motivational may benefit from the individual attention and student initiation of interaction characteristic of the individualized classes; those whose need is more cognitive-skill-related, may benefit from the nonindividualized setting, in which teachers make organized and structured presentations of the academic material.

The last interaction shown in this table relates classroom encouragement of student expressiveness, prior writing quality, and sex to the post-test measure of writing quality. Although there are minor exceptions for low-status boys (who show no significant differentiation across class levels) and for middle-status girls (who show high scores for medium and high expressiveness classes), the results on the whole reflect the U-shaped relationship initially seen in the significant main effect relating emphasis on expressiveness to writing quality, shown in Table 33. Children's writing was best in classes at both extremes of the expressiveness dimension, for the most part cutting across initial status levels.

Summary, Conclusions and Implications

General Summary

The purpose of this research was, in general terms, to identify sets of child characteristics and of classroom characteristics which, in combination, would make for optimal learning by children. It was based on the assumption that the effects of a particular educational program are mediated through the preferences, orientations, and needs of the children experiencing the program, and that a program which is very effective for one child may be ineffective for another, depending on the relevance of the program to the particular needs and preferences of the children. It was hoped that, if such sets of "matching" characteristics could be identified, applications could be made to suggestions for classroom assignments in instances where options were available.

Initially a pilot study was conducted (with data collected in the spring of 1973), primarily to develop and try out instruments and procedures, but also to make preliminary investigations of substantive issues. This pilot study (summarized in an earlier section of this report) was conducted in three "open" and three "traditional" classrooms. In the later "main" study, classrooms were not pre-selected as to "openness;" rather a broad sampling of classrooms at the fourth grade level in Montgomery County was obtained so that the important classroom characteristics and classroom "types" could be arrived at as a result of objective empirical observation rather than by prior designation.

Each of 50 fourth-grade classrooms (in 26 schools distributed among five of the school system's six administrative areas), was observed on eight separate one-hour occasions, spread throughout a school year, by eight different trained observers. The observers used a structured observation system to tally the occurrence of a large number of specific classroom activities, teacher behaviors, and student behaviors; they also made a set of global ratings, at the end of the visit, concerning the general classroom atmosphere and the quality of the teacher and student activities. Separate "factor analyses" were conducted with each section of the observation form (with scores for each item in each class summed across the eight observers who had visited the class). These factor analyses reduced a large number of items into a much smaller number of relatively stable underlying "dimensions." A questionnaire with which the teachers described their classroom organization and activities was also factor analyzed. There were eight classroom factor analyses in all, each rotated obliquely, producing a total of 33 factors. Factor scores from these factors were then used as input in a "second-order" factor analysis. This analysis produced six factors (rotated to orthogonal simple structure) which were considered to represent basic dimensions of classroom organization and activity. These factors were given the following names:

1. Warmth, friendliness, involvement, interest, vs. coldness, hostility, boredom.
2. Teacher control, structure, orderly task orientation vs. permissiveness, spontaneity, lack of control.
3. Imposed, common, repetitive activities vs. student-initiated (and -maintained), varied, simultaneous activities.
4. Non-individualized vs. individualized teacher-student interaction, teacher consultative role.
5. Energetic teacher promotion of student academic participation.
6. Emphasis on student expressiveness, exploration, and creativity.

Next, the 50 classrooms were "cluster-analyzed" into groups with similar profiles in terms of their factor scores on these six factors. This was done so that classroom "types" could be identified, in addition to the individual classroom dimensions. Each "type" is defined by the average profile of all the classes which fall into a single cluster. Six clusters were produced in this way, ranging in size from six to ten classrooms. The following descriptions are based on the profile of mean factor scores for each cluster:

Cluster one classrooms were extremely permissive, lacked control and orderliness, had varied, student-initiated activities, were moderately warm, and tended to have individualized interaction between teachers and students. Although they showed some of the characteristics which have been attributed to "open" classrooms, their extreme lack of control and order was beyond that recommended in the ideal "open" classroom (where control is shared between teacher and students).

Cluster two classrooms were highly controlled and orderly, but students also had relatively great opportunity to initiate their own, varied, activities. These classes were non-individualized and tended to be relatively cold. These were classes in which students tended to direct their own activities, but in a structured and somewhat cold and impersonal setting.

Classrooms in the third cluster tended to be cold and unfriendly and to have common (whole class) activities. They were also moderately permissive, and moderately oriented toward both academic participation and student expressiveness.

Classrooms in the fourth cluster tended to be warm and also fairly tightly controlled. They tended not to emphasize student expressiveness and creativity, and were moderate with regard to student initiation of activities, individualized interaction, and encouragement of academic participation.

Fifth cluster classrooms were very warm and friendly, showed a strong emphasis on student expressiveness and a very low level of encouragement of academic participation. They were moderate on control, student initiation of activities, and individualization of teacher-student interaction. This set of characteristics also seemed close, in several respects, to most descriptions of "open" classrooms.

Classrooms in the sixth cluster tended clearly to encourage academic participation, and to have individualized teacher-student interaction. They did not emphasize student expressiveness, tended to have common activities, and were moderate on both the control and warmth dimensions.

There were about 1300 fourth-graders in these 50 classrooms. They were administered sets of parallel questionnaires at the beginning and end of the school year measuring creativity, inquiry skill, self-esteem, and several school-related attitudes and values. At the end of the school year they were also asked to evaluate their class and their benefit from it. An achievement test was also administered at the end of the school year. Scores from another achievement test taken a year earlier (at the end of third grade) were obtained from school records. Questionnaires measuring various motives, preferences and orientations were also administered in the fall. At the end of the school year, the teachers made ratings concerning the classroom behavior of each of the children in their classes.

Each of these sets of child measures was factor-analyzed. The achievement test subscores all contributed to a single factor, in both pre- and post-tests, as did the creativity measures and the inquiry measures. The value and attitude measures produced four factors (in both fall and spring administrations). These were called, "self-confidence," "value on equality," "concern for others," and "value on task self-direction." The orientation and motive measures also produced four factors, called "preference for class with autonomy and personal expression for students," "compliant, conforming orientation," "personal control, intrinsic motivation," and "achievement motivation."

The next step was to derive clusters of children according to similarity between profiles of individual characteristics. Eleven factors (plus one additional measure), representing status at the beginning of the school year, comprised these profiles: the four orientation and motive factors, the four attitude and value factors (from the fall administration), the prior achievement test factor, the pre-test inquiry and creativity factors, and a measure of writing quality (rated from the responses to the pre-test inquiry skill items). This cluster analysis produced three clusters of children with distinctly different profile component means:

Members of the first cluster were low prior achievers who were not intrinsically motivated, not oriented toward others, lacked self-confidence, scored high on "compliant, conforming orientation," and moderately on "achievement motivation" and "self-direction."

Children in the second cluster tended to be highly motivated, self-confident prior achievers. They also scored low on self-direction and preference for autonomy and were moderately compliant.

Third-cluster members stated strong preferences for autonomy, personal expression, and self-direction. They scored quite low on "compliant orientation." Their prior achievement and motivation scores were moderate, except for "achievement motivation" which was low.

Analysis of variance was the primary method of data anlysis used to ascertain significant effects of the various measured classroom characteristics (and classroom types), of the child characteristics and types, and of the interactions between the two. (Sex of child was also included as a third independent variable in these analyses). Because it seemed most appropriate for the classroom to be the unit of analysis, a mean score was derived, within each classroom, for each sex by child cluster cell, for each dependent variable. Repeated measures analyses of variance were then run, with classroom cluster as a nonrepeated independent variable, and child cluster and sex as repeated independent variables (within classrooms).

There were fourteen outcome measures which served as dependent variables in most of these analyses. For those which had parallel pre- and post-scores, the outcome measure used was the post-test score adjusted for between-child differences in the pre-test score (using "residual gains" as calculated by a regression analysis). These included the measures of achievement, creativity, inquiry skill, and writing quality, the four attitude and value factors, and a measure of self-esteem (included separately because of its general interest, although it also contributed--fairly weakly--to the "self-confidence" factor). Two factors derived from the teachers' ratings of the students (called "perseverance, social maturity," and "activity/curiosity"), and three factors derived from the students' self- and class-evaluations (called "enjoyment of class," "social involvement," and "perceived disruptiveness in class") were also included as outcome measures in the analyses of variance.

The use of child and classroom clusters to investigate child by classroom interactions represented something of a methodological departure from previous related work. Our expectation was that there could be great advantages in applying a cluster approach to this purpose in that it allows for the comparison of the effects and combinations of naturally-occurring types in their multivariate complexity; this seemed an advantage over looking at the effects of abstracted individual dimensions alone, particularly if practical applications of the results were envisaged. Since we had measures of the individual dimensions (for both children and classrooms) and had cluster (or "type") designations as well, we decided to do the analyses both ways; to investigate the child cluster by classroom cluster interactions and also the child dimension by classroom dimension interactions.

It was anticipated that this might give us some notion of the relative utility of the two approaches. Comparison of the results obtained by the two methods, would furthermore, we thought, lead to a more complete understanding of the data than might be achieved by a limitation to one or the other method alone. (The other types of combinations, i.e., dimension by cluster and cluster by dimension interactions, were also investigated.)

Many of these analyses of variance were carried out. In general, the characteristics with which the child entered the class showed the strongest effects on the outcome measures (we will not summarize the content of these effects here, as this was not a major concern of this research); the classroom characteristics showed weaker but not negligible effects on the outcomes; and the classroom characteristic by child characteristic interactions showed a level of effect intermediate between these two--substantial but less pervasive than the child characteristic "main effects."

Two of the six classroom dimensions showed significant main effects on outcome measures which held for both sexes of children. Classroom control/orderliness significantly influenced children's achievement test performance and writing quality (in both instances children obtained higher scores in the more controlled and orderly classrooms). In addition, children's creativity was negatively influenced by the energetic encouragement of academic participation.

The classroom clusters (or "types") significantly influenced three of the outcome measures, with main effects for achievement test performance, perceived class disruptiveness, and activity/curiosity. Class clusters two and four (both characterized by high levels of control/orderliness) produced the highest achievement test scores, consistent with the effect obtained with the control dimension analyzed separately. Children in class cluster three, which contained classes which were both cold and relatively uncontrolled, perceived the greatest degree of disruptiveness; while those in clusters one (permissive and varied) and five (warm and expressive) evidenced the highest levels of activity/curiosity. In addition, a borderline effect upon creativity was obtained, with highest scores in warm and expressive classrooms which de-emphasized academic participation (cluster five).

A vast number of specific interaction effects were obtained in the various analyses of variance. In this summary we will sketch out the major trends which emerged from all these analyses.

Cluster by cluster interactions. A summary of these interaction effects is presented in Table 55. Cluster one children, relatively unmotivated, and with low levels of prior achievement and cognitive skill, tended to do their best in permissive and varied classrooms (cluster one) and in those which combined warmth with an emphasis on expressiveness (cluster five). It was suggested that such classes may have helped to provide (or develop) motivation which was initially lacking in these children. Cluster two children on the other hand, those characterized by high initial levels of motivation and cognitive skill, achieved their best performance in class clusters two and four, both characterized by high scores on the "control/orderliness" dimension, and moderate to high scores on "student initiation of varied activities." Here, the suggestion was that such children did not require extra spurs to their motivation, but were benefited by an environment which allowed them to progress in an orderly way with the mastery of relatively advanced academic skills, in a context which also allowed them a degree of self-direction. The cluster three children, who were noncompliant, valued self-direction, and preferred situations allowing for student autonomy and self-expression, showed varied results, among which was the finding that their activity and curiosity were maximized in the most permissive classrooms (cluster one), while their creativity was maximized in relatively controlled and orderly classrooms (clusters two and four). It seemed possible that their general activity level could be most promoted in situations which allowed them to express their inclinations, but that for the development of a specific cognitive skill, such as creativity, it was necessary to temper these inclinations by providing a relatively structured and orderly framework.

Dimension by dimension interactions. The interactions produced by the analyses involving child and classroom dimensions are summarized in Table 56. They showed trends which, in a number of respects, paralleled those obtained with the analyses involving clusters. The clearest and most numerous set of interactions obtained with

Table 55

Summary of Significant Cluster by Cluster Interaction Effects, Showing Outcome Measures Which Obtained Highest Scores For Different Combinations

Classroom Clusters	Child Clusters: One (Low prior achievement and cognitive skills, low personal control/intrinsic motivation, high compliance)			Child Clusters: Two (High prior achievement and cognitive skills, high motivation, low self-direction, autonomy, moderate compliance)			Child Clusters: Three (High autonomy, self-direction, and value on equality, moderate achievement, cognitive skills and personal control, low achievement motivation)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
One (Permissive, varied)		Concern for others	Activity/ curiosity, Creativity		Perseverance		Self-confidence, Concern for others	Concern for others	Activity/ curiosity
Two (Controlled, cold, S-initiation of varied activs., non-individualized)				Self-esteem, Self-confidence, Value on equality, Concern for others, Perseverance	Concern for others		Self-esteem	Self-confidence	Creativity
Three (Cold, common activities, moderate permissiveness)	Value on equality	Self-confidence					Self-esteem, Self-confidence	Value on equality, Concern for others	
Four (Warm, controlled)	Self-esteem, Self-confidence	Perseverance		Value on equality, Concern for others, Perseverance	Self-esteem, Self-confidence, Concern for others, Perseverance	Creativity	Perseverance	Concern for others, Perseverance, Value on equality	Creativity

Table 55 (continued)

Summary of Significant Cluster by Cluster Interaction Effects, Showing Outcome Measures Which Obtained Highest Scores For Different Combinations

Classroom Clusters	Child Clusters								
	One (Low prior achievement and cognitive skills, low personal control/intrinsic motivation, high compliance)			Two (High prior achievement and cognitive skills, high motivation, low self-direction, autonomy, moderate compliance)			Three (High autonomy, self-direction, and value on equality, moderate achievement, cognitive skills and personal control, low achievement motivation)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Five (Warm, expressive, non-academic, moderate control)	Value on Equality, Concern for others, Perseverance	Self-esteem, Value on equality	Creativity	Self-esteem, Self-confidence	Value on equality, Perseverance	Activity/curiosity, Creativity	Concern for others	Self-esteem, Perseverance	
Six (Energetic-academic, individualized)		Self-esteem, Self-confidence		Perseverance	Self-confidence, Value on equality		Value on equality, Concern for others		

Note: The "total" columns in this table reflect the results of significant two-way interactions; the "Boys" and "Girls" columns, three-way interactions.

Table 56

Summary of Significant Dimension by Dimension Interaction Effects, Indicating Relationship Directions Obtained with Different Outcomes[1]

Classroom Dimensions	Child Dimensions														
	Preference for Class with Autonomy			Compliant, Conforming Orientation			Personal Control/ Intrinsic Motiv.			Achievement Motivation			Socioeconomic Status		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Warmth vs. Coldness				Val. on equal. (m)	Val. on equal. (low)	Social involvement (m)	Inquiry (m), Self-dir. (m)	Inquiry (m), Self-dir. (m)		Creativity (-), Enjoyment of class (m), Percv'd disrupt. (-)	Creativity (high), Enjoyment of class (-), Percv'd disrupt. (m)		Ach. test (-), Enjoyment of class (-), Self-esteem (-)	Ach. test (m), Enjoyment of class (m), Self-esteem (med)	Val. on equal (-), Concern for others (-)
Control, Orderliness vs. Lack of Control, Permissiveness	Ach. test (+), Self-dir. (m), Persev. (high)	Ach. test (high), Self-dir. (+), Persev. (-)	Self-esteem (+), Self-dir. (+), Enjoyment of class (+)	Percv'd disrupt. (+)	Percv'd disrupt. (m)	Creativity (high), Perseverance (-)	Perseverance (high)	Perseverance (-)		Inquiry (high), Self-esteem (-)	Inquiry (-), Self-esteem (-)				
Common vs. Varied, S-Initiated Activities						Percv'd disrupt. (-)	Activ/curious. (low)	Activ/curious. (-)	Creativity (-), Enjoyment of class (-)	Value on equal. (+)	Value on equal. (m)				
Nonindividualized vs. Individualized Teacher-Student Interaction							Self-confidence (+)	Self-confidence (m)	Value on equal. (m)	Writing quality (m)	Writing quality (m, low)	Self-esteem (m,+)			

Table 56 (continued)

Summary of Significant Dimension by Dimension Interaction Effects, Indicating Relationship Directions Obtained with Different Outcomes[1]

Classroom Dimensions	Child Dimensions														
	Preference for Class with Autonomy			Compliant, Conforming Orientation			Personal Control/ Intrinsic Motiv.			Achievement Motivation			Socioeconomic Status		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Energetic Promotion of Academic Participation	Self-esteem (m), Percv'd disrupt. (-)	Self-esteem (m), Percv'd disrupt. (+)	Perseverance (m)			Value on equal. (m)	Creativity (low), Inquiry (m)	Creativity (-), Inquiry (m)	Creativity (low), Concern for others (m)	Creativity (low)	Creativity (low)		Enjoyment of class (high), Persev. (m)	Enjoyment of class (m), Persev. (m)	Self-esteem (m, +), Self-confidence (+), Self-dir. (m)
Emphasis on Student Expressiveness	Value on Equal. (+)	Value on Equal. (m)	Social involvement (m)				Creativity (m)	Creativity (m)	Perseverance (m)			Ach. test (m), Value on equal. (-), Concern for others (m)	Self-dir. (+)	Self-dir. (m)	

1. The symbols in parentheses indicate the direction of effects: "(+)" indicates a generally positive trend, so that high outcome scores occur when high levels of the child variable are combined with high levels of the class variable, and vice versa; "(-)" indicates a negative trend, so that high outcome scores occur when high levels of the child variable are combined with low levels of the class variable, etc.; "(m)" refers to a mixed or varied trend; "(high)", "(med)", and "(low)" refer to levels of the class variable which produce highest scores at all levels of the child variable.

Note: The "total" columns in this table reflect the results of significant two-way interactions; the "Boys" and "Girls" columns, three-way interactions.

children's preferences for classrooms allowing autonomy involved this variable with classroom control and orderliness. These interactions, which related to self-esteem, self-direction, enjoyment of class, and achievement test performance, generally showed autonomy-preferring children scoring highest in the more controlled and orderly classrooms, and structure-preferring children scoring highest in the more permissive classrooms. It was suggested that children apparently benefited from being required to experience modes of activity which their own inclinations would lead them to avoid (with respect to these dimensions at least); that children strongly inclined toward autonomy and freedom perhaps needed to have this inclination tempered somewhat by a relatively structured and orderly setting, while those preferring structure would obtain a parallel advantage through experiencing autonomy, freedom and variety. These findings, of course, were similar to some of those obtained for the cluster three children in the cluster by cluster interactions.

The clearest set of findings obtained with the child factor, "compliant, conforming orientation" also were comparable to the results with cluster three (which, it will be recalled, included both preference for autonomy and noncompliance as major components). In these interactions the least compliant children performed best with respect to several measures (including creativity and perseverance) in the most controlled and orderly classes; perhaps again, it was suggested, showing that a noncongruent environment can be valuable to temper one-sided inclinations.

Children characterized by a high degree of personal control/intrinsic motivation did best with respect to several outcomes (creativity, enjoyment of class, activity/curiosity) in classes in which the children were given the opportunity to initiate their own, varied activities, while children who were relatively low on this motivational factor did better in classes characterized by more common, teacher-directed activities; in these instances children seemed to benefit from the opportunities to follow their own inclinations. Another trend obtained with this child variable showed children scoring lowest on it to show the highest creativity and perseverance in classrooms most strongly emphasizing student expressiveness. It was suggested that the classroom atmosphere may have been helping to provide these children with the impetus and motivation which they lacked, an explanation similar to that suggested to account for the cluster by cluster interaction results obtained with the cluster one children.

The beneficial effect of stimulating and encouraging classroom atmospheres for poorly motivated children was also proposed to account for findings that children low in achievement motivation were most creative in, and enjoyed most, the warmest and friendliest classrooms, scored highest in self-esteem and writing quality in classrooms with relatively high levels of individualized teacher-student interaction, and scored highly on value on equality and concern for others in classes which strongly emphasized student expressiveness and exploration. In some of these interactions (particularly those involving emphasis on student expressiveness), the highly motivated children did best with classes at the other pole of the dimension, presumably because they did not require the added external impetus; in other instances the results were mixed for them. There was also a trend showing children with low achievement motivation scores doing best (with respect to inquiry skill and self-esteem) in the most controlled classrooms, while those at the highest motivation levels did well with less controlling classrooms.

Children's socioeconomic status (based on the family breadwinner's occupation) also served as an independent variable in some of these analyses. It showed significant interactions with two of the classroom dimensions, primarily. Low SES children generally did best, with respect to a number of outcome measures, in the "warmest" classrooms, while high SES children (particularly boys) did so in relatively "cold" classrooms. Our explanation of these findings was that the low SES children, who were also somewhat less motivated, may have felt more comfortable and been more stimulated and involved in the warmer classes, while the high SES boys, already relatively highly motivated, may have preferred a more businesslike approach. The other classroom factor which interacted with SES was "energetic encouragement of academic participation." High SES children obtained high self-esteem, self-confidence, class enjoyment, and perseverance scores in the most academically-oriented classrooms (perhaps because such children tended to be relatively academically inclined), while the low SES children showed some variation in results with respect to this class variable.

Cluster by dimension interactions. In addition to the cluster-by-cluster and dimension-by-dimension analyses summarized above, we also investigated the other combinations of these groupings--i.e., child dimension by classroom cluster and child cluster by classroom dimension--to see what additional light they might shed on the trends and processes involved in these data.

The major trends evident in the child dimension by classroom cluster interactions (summarized in Table 57) generally paralleled many of those found with the other groupings of the data. Children scoring low in achievement motivation and in personal control/intrinsic motivation obtained their highest scores on several outcome measures in class cluster five, which combined warmth with an emphasis on expressiveness. Those with high scores on these independent variables did best either in the warm and controlled classrooms, or the individualized and academic ones. A similar result was obtained with children's socioeconomic status; those of low status gained the most in self-esteem and value on equality in relatively permissive classrooms, while those of high status did so in clusters characterized by control and orderliness (two and four). Thus those with least internal motivation, and those who perhaps felt least comfortable in a structured academic situation tended to perform best in classes which possibly served to stimulate, involve and motivate them, while those with high levels of internal motivation and those who felt comfortable in academic situations, performed best in classrooms which provided a more structured and orderly approach to tasks, and those

Table 57

Summary of Significant Child Dimension by Classroom Cluster Interactions, Indicating Cluster in Which Each Level of Child Variable Obtained Highest Outcome Scores[1]

Classroom Clusters	Child Dimensions														
	Preference for Class with Autonomy			Compliant, Conforming Orient.			Personal Control/ Intrinsic Motiv.			Achievement Motivation			Socioeconomic Status		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
One (Permissive, varied)	Percv'd Disrupt. (high)	Percv'd Disrupt (med), Ach. test (high)	Self-dir. (low)						Concern for others (low)			Concern for others (med)			Self-esteem (low)
Two (Controlled, cold, S-initiation of varied activs., non-individualized)	Ach. test (med)	Ach. test (low)	Self-dir. (high)						Concern for others (med)		Per-sev. (low)	Value on equal. (med)			Value on equal. (med, high)
Three (Cold, common activities, moderate permissiveness)	Percv'd disrupt (low, med)	Percv'd disrupt (low, high)	Self-dir. (med)												Value on equal. (low)
Four (Warm, controlled)	Ach. test (low, high)	Ach. test (med, high)							Concern for others (high)			Value on equal. (high), Concern for others (high)	Inquiry (low, med)	Inquiry (low, med, high)	Self-esteem (high), Value on equal. (high)
Five (Warm, expressive, non-academic, moderate control)	Ach. test (Med)	Ach. test (med)							Concern for others (low)	Per-sev. (low, med)	Per-sev. (med, (high)	Value on equal. (low), Concern for others (low)	Inquiry (med, high)	Inquiry (low)	Self-esteem (med)

Table 57 (continued)

Summary of Significant Child Dimension by Classroom Cluster Interactions, Indicating Cluster in Which Each Level of Child Variable Obtained Highest Outcome Scores[1]

Classroom Clusters	Child Dimensions														
	Preference for Class with Autonomy			Compliant, Conforming Orient.			Personal Control/ Intrinsic Motiv.			Achievement Motivation			Socioeconomic Status		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Six (Energetic, academic, individualized)		Percv'd disrupt. (high)	Self-dir. (low)						Concern for others (high)	Persev. (high)		Concern for others (high)			Value on equal. (med)

1. The words in parentheses represent the level(s) of the child variable for which the highest scores were obtained in the class cluster indicated on the left.

Note: The "Total" columns in this table reflect the results of significant two-way interactions; the "Boys" and "Girls" columns, three-way interactions.

which had a more clearly academic emphasis.

At the same time, children who preferred structured situations tended to do well with respect to value on self-direction in classrooms characterized by varied, student-initiated activities, but performed best on the achievement test in controlled classrooms; while those stating a preference for autonomy obtained highest scores with both measures in controlled and orderly classrooms. It was again suggested, as with other instances involving children's preference for autonomy, that their performance may have been enhanced by situations which tempered or counteracted their inclinations.

The child cluster by classroom dimension interactions (shown in Table 58) provided some evidence of similar trends. Children in the first cluster, with low scores on prior achievement and other cognitive skills, low personal control/intrinsic motivation and high compliance scores, tended to perform best with respect to several outcome measures, including activity/curiosity and creativity, in classes which were permissive, provided for student autonomy, and/or which emphasized student expressiveness. Children in the second cluster, well-motivated prior achievers, who also stated a preference for structured classroom situations, performed best with respect to the same measures in classes which were highly controlled and orderly. Children in the third cluster, who stated values on self-direction, autonomy and self-expression, generally showed highest scores on activity/curiosity in classrooms which were permissive and varied, while their creativity scores tended to be highest in classes which were highly controlled and orderly, relatively unexpressive, and relatively unvaried. It was suggested, as before, that an environment consistent with their autonomous and expressive inclinations may serve to increase their activity level, but that the development of cognitive skills may require the tempering (and directing) of these inclinations by the provision of external control and discipline.

Table 58

Summary of Significant Child Cluster by Classroom Dimension Interactions, Indicating Level of Classroom Variable at Which Each Child Cluster Obtained Highest Outcome Scores[1]

Classroom Dimensions	Child Clusters: One (Low prior achievement and cognitive skills, low personal control/intrinsic motivation, high compliance)			Two (High prior achievement and cognitive skills, high motivation, low self-direction, autonomy, moderate compliance)			Three (High autonomy, self-direction, and value on equality, moderate achievement, cognitive skills and personal control, low achievement motivation)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Control, Orderliness vs. Lack of Control, Permissiveness		Self-dir. (low)	Activity/ curiosity (low)	Self-dir. (low)		Activity/ curiosity (high), Creativity (high)	Self-dir. (low)	Self-dir. (high)	Activity/ curiosity (low), Creativity (high)
Common vs. Varied, S-Initiated Activities	Activ./ curios. (med)	Activ./ curios. (high)		Activ./ curios. (high)	Activ./ curios. (low)		Activ./ curios. (low)	Activ./ curios. (high)	
Nonindividualized vs. Individualized Interaction	Writing (low), Self-dir. (med)	Writing (low), Self-dir. (high)		Self-dir. (low)	Writing (low), Self-dir. (low)		Writing (low, med), Self-dir. (high)	Writing (low, high), Self-dir. (low, med)	
Energetic Promotion of Academic Participation	Value on equal. (low, [illegible])	Value on equal. (low, high)			Value on equal. (low)		Value on equal. (low, high)	Value on equal. (med)	
Emphasis on Student Expressiveness			Percv'd. disrupt. (high), Creativity (high), Self-esteem (med)			Percv'd. disrupt. (low, med), Self-esteem (low, high)			Percv'd. disrupt. (med), Creativity (low) Self-esteem (low)

1. The words in parentheses represent the level(s) of the classroom variable for which the highest scores were obtained for the child clusters indicated at the top of the table.

Note: The "total" columns in this table reflect the results of significant two-way interactions; the "Boys" and "Girls" columns, three-way interactions.

Interactions involving children's prior status on selected cognitive measures. A final set of analyses (summarized in Table 59) examined the effects of different classroom settings on specific cognitive skills, for children with different initial levels of proficiency with the same skills. The purpose was to try to determine, for example, which type of class seemed to be optimal for the reading development of "poor readers," and whether it was similar or different from the type of class optimal for "good readers." For these analyses, children were grouped according to their scores on each of seven measures of initial cognitive skill: reading, mathematics concepts, mathematics problems, achievement test performance, creativity, inquiry skill, and writing quality. The clearest trends were seen with reading and mathematics concepts. Children with the lowest initial reading scores showed the best final reading performance in class cluster six (individualized, academic emphasis). Children who were initially more proficient readers performed best in class clusters one, two and four (all characterized by varied, self-initiated activities, and two of them by control and orderliness). Girls with initially low reading and math scores did best in relatively controlled and nonindividualized classrooms. Boys with low initial scores tended to perform best in classes at the extreme poles of both the control and individualization dimensions, while children of both sexes with higher initial scores performed best in highly controlled and moderately or highly individualized classrooms.

Some of these results (particularly those for boys) reflected trends seen repeatedly throughout these analyses, with less proficient children benefiting from permissiveness and stimulation (but also from discipline in some instances), more proficient children from orderliness, discipline, and the opportunity for self-direction. It was suggested that some low initial-status boys may have primarily motivational deficiencies and therefore do best with reading and mathematics in classes which are individualized and in those which are permissive; while others,

Table 59

Summary of Significant Child-Prior-Status by Classroom Interactions, Showing Classroom Level (or Type) Producing Highest Final Scores for Each Level of Prior Status

Child Variable	Prior Status Level								
	Low			Medium			High		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Reading	Low control, High control, Individ., Nonindivid.	Nonindivid.	Cluster six	Med control, High control, Med individ., Nonindivid.	High control, Individ.	Cluster two, High control	High control	High control	Cluster two, Cluster one, Cluster four, High control
Mathematics Concepts	Low control, High control, Nonindivid., Individ.	High control, Nonindivid.		Low control, Nonindivid.	High control, Individ.		High control, Med. individ.	High control	
Achievement Test Total	Nonindivid.	Med individ., Nonindivid.		Med individ., Nonindivid.	Individ., Nonindivid.		Med individ.	Individ., Nonindivid.	
Inquiry Skill			High control			High control			
Writing Quality		Low enc. express., High enc. express.		High enc. express.	Med enc. express, High enc. express.		High enc. express.	Low enc. express, High enc. express.	

Note: The "total" columns in this table reflect the results of significant two-way interactions; the "Boys" and "Girls" columns, three-way interactions.

may have more cognitive deficiencies and therefore derive greatest benefit from the highly controlled and the nonindividualized classes (in which teachers more frequently made structured presentations of material).

Conclusions

Salomon (1972) has provided a useful framework for research and theorizing concerning "aptitude-treatment interactions." He describes three basic "heuristic models," called "remedial," "compensatory," and "preferential." The "remedial" model predicts optimal results when an educational program focuses on teaching an individual prerequisite skills in which he is deficient; the "compensatory" model focuses on treatments which bypass the student's deficiencies either by supplying external substitutes for them or by circumventing the need for them altogether through changing the situation so that the lacking skills, etc. will not be required; the "preferential" model attempts to "match" the student's skills and/or motives, to provide a setting which capitalizes on his strengths and inclinations.

Although our initial expectations for this research were generally in keeping with the "preferential" model, and both the results of the pilot study and many of those in the present study have been generally in line with such an approach, numerous of the present study's findings also appear to be consistent with the "remedial" or "compensatory" models; many of the explanations which have been offered have been framed in terms similar to these, in fact.

Thus it has been suggested that children low on prior achievement, cognitive skills and/or achievement-related motivation tended in many instances to perform best in classes which were permissive, warm, etc. because they were either being supplied with an external motivation to substitute for that which they lacked (a compensatory explanation) or were actually helped to improve their motivation, and hence their performance in these classes (a remedial explanation). (We did not have the data to allow us to choose between these two, related, explanations. If motivational measures had been collected at a second point in time, near the end of the school year, rather than only at the beginning, more specific evidence on this point would have been available.)

A compensatory explanation was also provided to account for many of the findings obtained for the children in the autonomous, self-directing, noncompliant cluster, and for those at both poles of the preference for autonomy dimension. Particularly with respect to cognitive measures, children with the strongest expressed preferences for autonomy, self-expression, etc., performed best in the more controlled and orderly classrooms, while those whose stated preference was for more structure showed greater gains in classrooms which allowed more student autonomy and self-direction. The general explanation offered was that children at each extreme benefited from a setting which required them to experience a mode of activity which they would otherwise avoid, thus providing them with something which they lacked (greater discipline in their approach to tasks for the autonomous/expressive children; greater experience with choice, freedom, and self-direction for those more oriented toward external control and structure.) Another set of findings obtained with the autonomy-preferring children, showing that their activity level and curiosity were highest in permissive classrooms, was explained with a matching, or "preferential" model. Thus, it was suggested, their activity was apparently stimulated in the setting which they preferred, but their cognitive development was best served by that which they needed.

Results for the achieving, well-motivated children of cluster two, showing that they generally performed best in the most controlled and orderly classrooms (or in clusters containing this control dimension as a common element) were accounted for in part with a quasi-compensatory explanation; i.e., that the structure and discipline of these classes helped them to progress from an already high level of proficiency by providing the orderly framework needed for this task. The framework in this instance is not so much compensating for a lack as meeting a need; thus, though related, it is not clearly compensatory.

In a few instances, the same child factors appeared to be involved in "compensatory" relationships when combined with other factors into clusters, but in "preferential" relationships when considered individually. Thus, the two motivational factors, achievement motivation and personal control/intrinsic motivation, both contributed high mean scores to the profile of cluster two (along with prior achievement and cognitive skills), the cluster which showed generally good performance in controlled and orderly classrooms. When considered separately, each of these motivational characteristics showed some tendency to interact negatively with class control; i.e., children scoring high on these variables tended to perform best in moderate- or low-control classes. Thus the composite represented by the cluster produces effects which in some cases could not be predicted from knowledge of the effects of its individual components. In applications to particular cases this suggests the necessity of considering both types of results; especially in instances where a child's profile does not clearly resemble one of the three "types" identified in this research, it would then be possible to make predictions and recommendations based on the results for the individual dimensions.

As suggested above, the major trends which emerged from the results of the present study were only partially in agreement with those obtained in the pilot study. The main effects were generally similar between the studies, while the interactions were partially similar and partially dissimilar. We cannot account for the differences specifically, but would point out that the pilot study was conducted primarily to develop instruments and procedures, included only six classrooms (compared to 50 in the present study), and did not include pre-test measures of the various outcome variables, with the exception of achievement test performance (while, of course, the present study included pre- and post-test measures of most of the outcome variables). Thus, although more complete agreement between the two studies would have increased our confidence in the reliability and stability of the findings and explanations, we would have to state that where there are differences, the results of the later study are more likely to be valid and replicable.

Some additional support for the validity of some of these findings is provided by comparing them with those reported in a recently-published paper by Ward and Barcher (1975). In their study, carefully matched groups of children were compared between "open" and "traditional" classroom settings. High IQ children scored higher on measures of reading and creativity in traditional than in open classrooms. Low IQ children were not significantly differentiated between settings, but the trend was for their scores to be higher in the open classrooms. If we assume that low and high IQ children are represented, respectively, in the present child clusters one and two, and that classroom "openness" is most closely represented by the control/orderliness vs. permissiveness/child autonomy classroom dimension, the Ward and Barcher results are clearly similar to those obtained in the present study, including but not limited to those involving the same dependent variables. Their explanation of the reading results for the high IQ children is similar to that offered on several occasions in the present report to account for results obtained for the cluster two children:

> The structure of the traditional approach could well include mastery of the proper sequences of skills in reading which are necessary to help bright children progress, while the open class's tendency to concentrate upon the enjoyment and usefulness of reading may not take the bright child to his optimum level. (P. 690).

We have implicitly been proposing a hierarchical ordering of needs to be met (or compensated for) by the classroom setting. For those with low levels of prior performance and/or motivation, a motivational impetus is their most important need. Before their cognitive skills can advance, they require encouragement to explore and come to feel comfortable with a particular academic area, or with classroom activities in general. For those who are already well-motivated and/or proficient, additionally motivating circumstances are not required; in fact, in some instances they apparently impede their performance. What they require are more orderly and disciplined approaches to tasks to help them to advance in their academic skills. A setting which gives them some opportunity for initiating and directing their own tasks, within this disciplined framework, also appears to be beneficial for this group of children.

As we stated earlier, the use of the cluster analysis methodology, and the analysis of child by classroom interactions using cluster assignments, was something of a departure from previous research. An obvious question is, therefore, how do the results obtained with this approach compare with those using the more usual individual variable approach, represented in this research by the dimension by dimension analyses? Because the two approaches group the data differently, a simple and direct comparison of their results is not possible. We have, however, pointed out numerous occasions when the results obtained by one approach were consistent or in general agreement with those obtained by the other, and some occasions when they appeared not to be in agreement. Comparisons of the results obtained with the different approaches furthermore seemed useful in coming to a general understanding of the processes involved. Comparing dimension results with cluster results could suggest which of the cluster components was more critical in producing a particular effect; comparing cluster results with dimension results could indicate how the individual dimensions functioned with respect to particular effects when combined into groups. Thus our results do not appear to offer evidence for the superiority of one approach over the other. What they do seem to show is that it is very useful to have both methods applied to the same data, so that the two can be compared, and generalizations developed which take both sets of results into account.

Implications

Theoretical implications. This study falls into the general framework of research on "attribute-treatment interaction." The general assumption of this expanding body of research, that educational treatments' effects are differentiated according to individual characteristics of the students, has been under attack. While it is a logical and attractive idea, it has not yet been definitively demonstrated to be true, with empirical findings. Goldberg (1969) suggested that much of the research in this area may have failed to find consistent evidence of such interactions because the measures of individual characteristics used had been originally developed to be cross-situationally general (i.e., to be relatively impervious to situational influences and effects). He suggested that new measures should be constructed, for the purposes of research of this type, which attempt to maximize situational effects. Some of the preference and orientation measures developed for the present research were fashioned with this intent (e.g., structured role orientation, locus of instigation, class characteristics preferences); others were selected with this criterion in mind (e.g., bureaucratic orientation, locus of control). Although the particular set of individual measures used in this research may not have been the best possible, they did produce a large number of significant interactions (in their various groupings and combinations).

In our opinion, the present results constitute fairly [illegible]bstantial evidence that child by classroom interactions do exist and represent an important influence on academic outcomes. While the impact of such interactions is less than that of individual child characteristics considered by themselves, it is far from negligible and can add to general understanding of the educational process. For example, there are few instances in which initially high-achieving children will not outperform initially low-achieving children. But across class types, it is possible to identify those in which the high-achieving children do their best, and those in which the low-achieving children do their best; these are usually not the same types of class. When such differences are identifiable, they are important to know, and have obvious potential for application.

Practical implications. The plan for this research was originally framed with relevance to issues concerning "paired classrooms" or "paired schools" in mind. The concept, in the Montgomery County school system at least, has now shifted to "alternative schools," etc. but the same application possibilities exist. In situations which allow a choice between several identifiable educational programs (either within the same building or in different buildings), knowledge about the performance of different types of children in different types of programs or settings could be used in making recommendations about the optimal placement for a particular child.

There are, however, some limitations on the degree to which the findings of this research can be generalized and applied. Since the research was limited to a single grade level, extensions to other levels, if done at all, should be done with great caution. One should, strictly speaking, also be somewhat cautious about applying the results even at the fourth grade level until they have been clearly replicated in additional research. This is not to say that applications should not be made. Tentative as these results may be (as the results of any single study must be), they still represent the best evidence currently available concerning the performance of different types of children in different types of classrooms.

Several types of applications of these results can be envisaged. The most direct application would be in situations in which parents (and/or children) are being counseled regarding a choice between alternative programs. We would suggest that where alternative programs are being offered, data describing these programs should be routinely collected, either using the instruments developed for this research, or shorter variants adapted from them. If this should prove to be unfeasible, it might still be possible to characterize programs in terms of similarity to the classroom types identified in this research, and in terms of their relative positions with respect to the various classroom dimensions. Even the simplest means of characterizing programs will require some form of a questionnaire, to be given to teachers or principals (or, possibly, to students). In cases where choices are being made with respect to programs which are being planned but are not yet in existence, these plans could possibly be characterized in terms of the same clusters and dimensions.

The relevant characteristics of the children involved in such alternative choices would also have to be assessed in some way before placement recommendations could be made. While the optimal way would be to use the instruments developed in this research, some briefer assessment procedures, involving teacher ratings and less extensive child questionnaires, could also be adapted from these. It might be possible, for example, for teachers to rate children in terms of the various "types" and "dimensions." Preliminary research validating these abbreviated assessment procedures would first be required, however.

When scores on each dimension have been determined (either for children or for classrooms), it would be possible, with a "discriminant function" technique, to show how similar the individual (child or classroom) was to each of the clusters identified in the present research, and then to characterize that individual in terms of the most similar cluster. If direct ratings or designations of probable cluster membership are made directly, of course, this intermediate step would be bypassed. If none of the clusters seemed appropriate to a particular case, attention could be focused on individual dimensions rather than profiles. Since this research has presented results with the data grouped both ways, either (or both) sets of results can be used in making suggestions for any particular child.

When the counselor advising the parents had obtained the relevant information about the child concerned, he would be able to make some general recommendations about the kind of program in which the child would be likely to make the best progress, based on the results of this research. He could then determine which of the available alternative programs most closely approximated the suggested optimal program for that child. It would be important to emphasize that this was considered a provisional placement, subject to continual reevaluation, and to revision if it did not seem to be working out. It would also be important to periodically reevaluate the child's needs with respect to the different programs. For example, some of our results suggest that an open, permissive program may be beneficial for poorly motivated, low achieving children, and that a controlled and orderly program (with some opportunity for self-direction) appears best for more proficient and more highly motivated children. If a poorly motivated child were placed in an open, permissive program which had the result, after a period of time, of improving that child's proficiency and motivation, it might at that point be recommended that a more controlled program would then be in order. It would probably be advisable to keep classrooms "balanced" in terms of any particular child characteristic, however. The results of this study, having been derived from classrooms composed of combinations of children with different sets of characteristics, are most applicable to similarly heterogeneous classrooms. Whether similar effects would occur in classrooms more homogenous with respect to such characteristics cannot be known without additional research.

This research also has possible implications for program planning and teacher selection. Once it has been established that certain programs produce optimal effects for certain types of children, and if it were known what the distribution of these types of children were (it is, of course, known within the context of the sample in this research), the relative frequency of some programs could be increased, and that of others decreased, so as to best match the needs of the general child population. Teacher recruitment and in-service training could in similar ways take the relative matching of program distributions and child type distributions into account in determining what kinds of teacher-orientations and practices to emphasize and encourage at any particular time.

We would strongly recommend that research should be considered a basic aspect of any moves toward providing options between alternative programs. It is crucial that children moving into the different programs, based on recommendations derived from this research or from any other source, should be followed up to determine to what degree the predictions are borne out. It would also be desirable for further research to be done attempting to extend the present findings to additional grade levels and samples of children. Whether such research uses the instruments developed in this research, variants of them, or other instruments altogether is immaterial. What is important is to establish routine procedures for obtaining continuous and objective assessments of the utility of educational programs, particularly (but not only) innovative ones. Too many policies and programs have become "fads," surrounded by a brief whirlwind of praise and polemic, soon largely dying out with the waning of the first wave of enthusiasm, but innocent of objective appraisal or research from first to last.

Experiments with alternative programs certainly deserve and require ongoing research, evaluation, and resulting informed revision. We hope that such steps will continue to be taken.

Publications and Paper Presentations from This Project

Publications

Solomon, D. & Kendall, A. J. Teachers' perceptions of, and reactions to "misbehavior" in traditional and open classrooms. Journal of Educational Psychology, 1975, 67, 528-530.

Solomon, D. & Kendall, A. J. Individual characteristics and children's performance in "traditional" and "open" classroom settings. Journal of Educational Psychology, in press.

Solomon, D. & Kendall, A. J. Dimensions of children's classroom behavior, as perceived by teachers. Submitted for publication.

-- A description of the instruments measuring children's preferences, orientations, motives, and school-related attitudes which were developed for this project is to be included in the forthcoming new edition of Tests and Measurements in Child Development: A Handbook, Jossey-Bass, Inc., Edited by O. G. Johnson and J. W. Bommarito.

Presentations

Solomon, D. & Kendall, A. J. Individual characteristics and children's performance in "open" and "traditional" classes. Presented at meeting of American Educational Research Association, Washington, D.C., April, 1975.

Solomon, D. & Kendall, A. J. Dimensions of children's classroom behavior, as perceived by teachers. Presented at meeting of Society for Research in Child Development, Denver, Colorado, April, 1975.

Kendall, A. J. & Solomon, D. Classroom dimensions and classroom types. Presented at meeting of American Psychological Association, Chicago, August, 1975.

Solomon, D. Interactions between child-types and classroom-types. Presented at meeting of Maryland School Psychologists Association, Baltimore, Md., April, 1976.

Solomon, D. & Kendall, A. J. Interactions between child-types and classroom-types. To be presented at meeting of American Psychological Association, Washington, D. C., August-September, 1976.

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Appendix A

Supplementary Tables

Table 60

New Achievement Motivation Scales: Item-Total and Inter-Scale Correlations

Items in Scales	Scale 1 Total	Scale 2 Total	Scale 3 Total
Scale 1: Preference for Challenging Tasks Vs. Avoidance of Risk			
Preference for jobs "that I might not be able to do" (over those "I'm sure I can do")	.36	.01	.05
Liking for puzzle "that takes hard work to solve" (over one "easy to solve")	.50	.19	.08
Preference for helping at home with "things that are hard and I'm not sure I can do" (over "usual things I know I can do")	.47	-.01	.09
Preference for playing checkers against slightly better (rather than slightly worse) opponent	.52	.27	.15
Preference for working a hard, new (over an easy, familiar) puzzle	.48	.08	.04
Preference for getting model "like one I messed up last time" (rather than "one I did a good job on last time")	.42	.08	.05
Preference for solving "a hard problem without any hints" (rather than with hints)	.43	.12	.11
Preference for giving answer "even if it might be wrong" (rather than giving it "only if I'm sure it's right")	.43	.14	.06
Preference for working to improve "in a subject I'm not too good at" (rather than one "I'm pretty good at")	.51	.23	.06
Preference for playing a game "that is hard for me to win" (rather than one "that is easy for me to win")	.57	.18	.13
Scale 2: Preference for Interpersonally Equal Vs. Dominated Situations			
Preference for game "where everyone is about the same" (vs. one "where I'm better than anyone else")	.18	.57	.09
Predominant concern with "having fun" rather than with "winning" when playing game	.20	.63	.07
Preference for painting pictures when "everyone's work" vs. "only the best work" is displayed	.06	.59	.07
Preference for playing game when "I am as good as my playmate" vs. "much better than my playmate"	.23	.67	.15
Preference for classes in which all students are about equally proficient vs. one in which "I (am) better than almost all the others"	.21	.65	.22

Table 60 (continued)

Items in Scales	Scale 1 Total	Scale 2 Total	Scale 3 Total
Scale 3: Academic Motivation			
Preference for learning "games where I would learn something" (vs. "fun games")	.11	.11	.61
"When I am sick, I would rather .. try to do my school work (than) rest and relax"	.09	.03	.63
"After summer vacation, I am .. glad (rather than not glad) to get back to school"	.11	.21	.62
"If I were getting better from a serious illness, I would like to .. spend my time learning how to do something" (rather than "relax")	.14	.14	.65
Scale 2 Total	.28		
Scale 3 Total	.18	.20	

Table 61

Class Preference Scales: Item-Total and Inter-Scale Correlations

Items in Scales	Scale 1 Total	Scale 2 Total	Scale 3 Total
Scale 1: Preference for Classes with Freedom of Activity (vs. Restrictiveness)			
Preference for class in which children get books and materials at will (vs. only at T direction)	.64	.39	.21
Preference for class in which children walk around at will (vs. only with T permission)	.60	.47	.30
Preference for class in which "things are very friendly" (vs. "main attention is on getting the work done right")	.52	.27	.11
Preference for class in which "work on any subject can start and end at any time" (vs. "regular starting and ending times")	.64	.33	.17
Preference for class in which "kids can talk...whenever they want to" (vs. "only when the teacher calls on them")	.60	.38	.24
Preference for class with no (vs. much) testing	.50	.30	.16
Scale 2: Preference for Classes which Allow Children Autonomy (vs. Teacher Control)			
Preference for class in which children choose (vs. teacher plans) what they do	.47	.67	.24
Preference for class in which children (vs. teacher) decide who will work together on which things	.40	.59	.20
Preference for class in which children (vs. teacher) decide on rules and punishments	.42	.62	.26
Preference for class in which children (vs. teacher) decide what and how to learn	.11	.51	.20
Preference for class in which children (vs. teacher) decide on need for homework	.43	.70	.27
Preference for class in which "kids work on anything they want at any time" (vs. "teacher always decides what the kids should work on")	.50	.68	.28

Table 61 (continued)

Items in Scales	Scale 1 Total	Scale 2 Total	Scale 3 Total
Scale 3: Preference for Classes where Students are Involved in Teaching (vs. T Monopolization)			
Preference for class in which "kids spend a lot of time helping each other" (vs. "teacher gives kids any help they need")	.01	.06	.56
Preference for class in which "kids (vs. only teacher) always check and correct each others' work"	.18	.20	.62
Preference for class in which children "talk with each other about their work, mostly without the teacher" (vs. "only the teacher talks with the kids about their work")	.30	.29	.62
Preference for class in which "kids spend a lot of time teaching each other" (vs. "all the teaching is done by the teacher")	.34	.40	.69
Scale 2 Total	.60		
Scale 3 Total	.33	.39	

Table 62

Correlations Between Individual-Level Factors, Outcome Residuals, and Miscellaneous Measures

		Orientation/Motive Factors				Prior Cognitive Skills and Self-Esteem				
		Pref. for Class with Autonomy	Compliant, Conforming Or.	Pers. Control, Intr. Mot.	Achievement motivation	Prior Achievement	Pre-Creativity	Pre-Inquiry Skill	Pre-Writing Quality	Pre-Self-Esteem
Orientation/Motive Factors										
Compliant, Conforming Orientation	Boys	-.16*								
	Girls	-.09								
	Total	-.13*								
Pers. Control Or., Intrin. mot.	Boys	-.10	-.07							
	Girls	-.03	-.15*							
	Total	-.09	-.09*							
Achievement Motivation	Boys	-.22*	.09	.13						
	Girls	-.19*	.01	.26*						
	Total	-.21*	.05	.20*						
Prior Cognitive Skills and Self-Esteem										
Prior Achievement	Boys	.04	-.37*	.26*	-.11					
	Girls	-.06	-.35*	.35*	.16*					
	Total	-.02	-.34*	.31*	.03					
Pre-Creativity	Boys	-.06	-.14*	.10	-.07	.29*				
	Girls	-.03	-.15*	.16*	.06	.27*				
	Total	-.08	-.10*	.17*	.01	.29*				
Pre-Inquiry Skill	Boys	.05	-.26*	.19*	.01	.44*	.05			
	Girls	.02	-.31*	.20*	.14*	.37*	-.01			
	Total	.04	-.28*	.19*	.08	.40*	.02			
Pre-Writing Quality	Boys	.00	-.17*	.22*	-.02	.51*	.36*	.55*		
	Girls	-.09	-.17*	.22*	.10	.37*	.33*	.46*		
	Total	-.06	-.15*	.23*	.05	.45*	.37*	.50*		
Pre-Self-Esteem	Boys	-.04	.00	.36*	-.03	.23*	.11	.19*	.28*	
	Girls	-.03	.01	.21*	.08	.26*	.15*	.10	.21*	
	Total	-.04	.01	.29*	.02	.24*	.13*	.15*	.24*	

Table 62 (continued)

		Orientation/Motive Factors				Prior Cognitive Skills and Self-Esteem				
		Pref. for Class with Autonomy	Compliant, Conforming Or.	Pers. Control Intr. Mot.	Achievement motivation	Prior Achievement	Pre-Creativity	Pre-Inquiry Skill	Pre-Writing Quality	Pre-Self-Esteem
Prior Attitudes and Values										
Pre-self-confidence	Boys	-.12	-.31*	.34*	.02	.38*	.20*	.25*	.31*	.48*
	Girls	-.13*	-.33*	.30*	.23*	.38*	.20*	.21*	.24*	.44*
	Total	-.14*	-.30*	.33*	.13*	.38*	.22*	.23*	.29*	.46*
Pre-value on Equality	Boys	.17*	-.29*	.18*	.06	.21*	.10	.13*	.12	.10
	Girls	.12	-.31*	.16*	.11	.17*	.03	.20*	.11	.02
	Total	.15*	-.30*	.16*	.08	.19*	.05	.16*	.10*	.06
Pre-concern for Others	Boys	.05	-.29*	.22*	.12	.28*	.14*	.18*	.23*	.05
	Girls	.04	-.39*	.28*	.26*	.30*	.16*	.26*	.21*	.03
	Total	.03	-.33*	.26*	.19*	.29*	.17*	.22*	.23*	.04
Pre-value on Self-direction	Boys	.30*	-.24*	-.06	-.04	.05	.01	.07	.01	-.04
	Girls	.13	-.14*	.02	.05	-.07	.00	.06	.03	-.08
	Total	.24*	-.20*	-.04	.00	-.01	-.03	.06	.00	-.06
Residuals: Cognitive Skills and Self-Esteem										
Res. Ach. Test Performance	Boys	-.08	-.12	.15*	-.03	.05	.17*	.10	.24*	.17*
	Girls	-.01	.01	.09	-.02	-.08	.04	.03	.05	.12
	Total	-.06	-.04	.13*	-.02	.00	.12*	.07	.16*	.15*
Residual Creativity	Boys	-.04	-.13	.06	-.09	.23*	-.04	.15*	.11	.10
	Girls	-.06	-.13	.09	.04	.24*	-.04	.20*	.14*	.09
	Total	-.07	-.11*	.09	-.01	.24*	.00	.18*	.14*	.10*
Residual Inquiry Skill	Boys	-.11	-.13	.26*	.07	.27*	.23*	.06	.20*	.12
	Girls	-.03	-.15*	.18*	.06	.28*	.27*	-.06	.11	.13
	Total	-.08	-.13*	.22*	.07	.28*	.27*	.00	.17*	.12*
Residual Writing Quality	Boys	-.03	-.15*	.10	-.05	.36*	.14*	.13	.05	.10
	Girls	.02	-.16*	.17*	.03	.38*	.13	.04	-.10	.12
	Total	-.03	-.13*	.15*	.00	.37*	.17*	.09	.00	.11*
Residual Self-Esteem	Boys	-.02	-.02	.13	.03	.17*	.07	.07	.09	-.03
	Girls	.03	-.10	.18*	.08	.22*	.15*	.12	.16*	.05
	Total	.00	-.06	.15*	.05	.19*	.10*	.09	.12*	.01

Table 62 (continued)

		Prior Attitudes and Values				Residuals: Cognitive Skills and Self-Esteem			
		Pre-self Confid-ence	Pre-val-ue on Equality	Pre-con-cern for Others	Pre-val-ue on Self-dir.	Res. Ach. Test Perf.	Residual Creat-ivity	Residual Inquiry Skill	Residual Writing Quality
Prior Attitudes and Values									
Pre-Value on Equality	Boys	.16*							
	Girls	.22*							
	Total	.18*							
Pre-Con-cern for Others	Boys	.34*	.25*						
	Girls	.40*	.26*						
	Total	.38*	.25*						
Pre-Value on Self-Direction	Boys	.06	.13	.00					
	Girls	.08	.14*	.11					
	Total	.05	.14*	.04					
Residuals: Cognitive Skills and Self-Esteem									
Res. Ach. Test Per-formance	Boys	.16*	.08	.07	-.03				
	Girls	.06	-.05	-.02	-.01				
	Total	.12*	.02	.03	-.03				
Residual Creativity	Boys	.18*	.04	.02	.00	.16*			
	Girls	.11	.09	.09	-.07	.09			
	Total	.15*	.06	.07	-.05	.13*			
Residual Inquiry Skill	Boys	.22*	.14*	.18*	-.11	.20*	-.12		
	Girls	.13	.04	.11	-.05	.03	-.11		
	Total	.18*	.09	.15*	-.09	.12*	-.10*		
Residual Writing Quality	Boys	.16*	.09	.06	-.02	.21*	.20*	.36*	
	Girls	.13*	.02	.07	-.07	.16*	.27*	.37*	
	Total	.16*	.04	.08	-.06	.20*	.25*	.37*	
Residual Self-Esteem	Boys	.06*	.07	.06	-.05	.19*	.09	.14*	.17*
	Girls	.11	.02	.05	-.02	.18*	.03	.12	.16*
	Total	.08	.05	.06	-.03	.19*	.06	.13*	.16*

Table 62 (continued)

		Orientation/Motive Factors				Prior Cognitive Skills and Self-Esteem				
		Pref. for Class with Autonomy	Compliant, Conforming Or.	Pers. Control, Intr. Mot.	Achievement motivation	Prior Achievement	Pre-Creativity	Pre-Inquiry Skill	Pre-Writing Quality	Pre-Self-Esteem
Residuals: Attitudes and Values										
Residual Self-Confidence	Boys	-.06	-.07	.20*	.12	.16*	.09	.09	.09	.04
	Girls	-.02	-.13*	.16*	.09	.20*	.09	.18*	.13*	.07
	Total	-.05	-.09	.19*	.11*	.18*	.11*	.13*	.12*	.05
Residual Value on Equality	Boys	.02	-.15*	.07	.09	.08	.00	.09	.05	-.04
	Girls	.02	-.13	.18*	.08	.10	.09	.03	.04	.05
	Total	.00	-.12*	.14*	.09	.10	.08	.06	.07	.00
Res. Concern for Others	Boys	-.11	-.12	.19*	.12	.17*	.07	.12	.12	.13
	Girls	.01	-.15*	.25*	.22*	.26*	.08	.16*	.06	.04
	Total	-.07	-.11*	.24*	.17*	.22*	.11*	.14*	.11*	.09
Res. Value on Self-Direction	Boys	.14*	-.14*	.06	-.03	.06	.01	.02	-.01	.03
	Girls	.08	-.23*	.09	-.02	.10	.06	.15*	.09	.04
	Total	.12*	-.19*	.06	-.03	.07	.02	.08	.03	.03
Students' Ratings										
Enjoyment of Class	Boys	-.16*	.16*	.14*	.13*	.00	.00	.03	.05	.12
	Girls	-.06	.16*	.12	.20*	.08	.02	-.01	.00	.12
	Total	-.14*	.18*	.16*	.17*	.05	.06	.01	.06	.12*
Friends in Class	Boys	.02	.08	.08	.09	-.09	-.02	-.03	.04	.02
	Girls	.00	.04	.05	.09	-.05	.04	-.05	-.03	.04
	Total	.00	.06	.07	.09	-.07	.02	-.04	.01	.03
Perceived Class Disruptiveness	Boys	.05	.03	-.08	-.01	-.06	-.10	-.05	-.03	-.05
	Girls	.06	.13	-.15*	-.05	-.12	-.02	-.07	-.08	-.09
	Total	.06	.08	-.12*	-.03	-.09	-.06	-.06	-.05	-.07

Table 62 (continued)

		Prior Attitudes and Values				Residuals: Cognitive Skills and Self-Esteem				
		Pre-Self Confi-dence	Pre-Value on Equality	Pre-Concern for Others	Pre-Value on Self-dir.	Res. Ach. Test Performance	Residual Creat-ivity	Residual Inquiry Skill	Residual Writing Quality	Residual Self-Esteem
Residuals: Attitudes and Values										
Residual Self-Confidence	Boys	.01	.12	.05	-.06	.18*	.11	.19*	.16*	.43*
	Girls	-.02	.08	.09	-.11	.08	.06	.07	.11	.40*
	Total	.01	.10*	.08	-.10*	.14*	.10*	.14*	.15*	.42*
Residual Value on Equality	Boys	.13	-.02	.18*	.01	.05	.09	.09	.03	.04
	Girls	.08	.03	.18*	-.05	.03	.02	.05	.06	.03
	Total	.11*	.00	.19*	-.03	.05	.07	.08	.07	.03
Res. Concern for Others	Boys	.19*	.13	-.08	-.09	.05	.14*	.13	.05	.01
	Girls	.06	.09	.04	-.13	-.03	.11	.10	.14*	-.03
	Total	.14*	.10*	-.01	-.12*	.03	.14*	.12*	.12*	-.01
Residual Value on Self-dir.	Boys	.04	.05	.01	.02	-.05	-.08	.08	-.04	-.04
	Girls	.05	.09	.03	-.04	-.04	.08	.04	.04	-.02
	Total	.04	.07	.01	.00	-.05	.00	.05	-.01	-.03
Students' Ratings										
Enjoyment of Class	Boys	.10	-.07	.03	-.13*	.12	.02	.05	.10	.23*
	Girls	.05	-.02	.01	-.06	.06	.00	.09	.07	.13*
	Total	.09*	-.06	.04	-.12*	.11*	.03	.08	.12*	.18*
Friends in Class	Boys	-.01	-.01	.01	-.03	.06	.05	.01	-.04	.25*
	Girls	.03	-.05	.06	-.01	-.04	-.03	-.01	-.07	.11
	Total	.02	-.03	.04	-.02	.02	.01	.01	-.05	.18*
Perceived Class Disruptiveness	Boys	-.10	-.04	-.15*	.03	-.14*	-.06	-.04	.00	-.08
	Girls	-.10	-.04	-.09	-.01	-.06	-.06	-.09	-.10	-.07
	Total	-.10*	-.04	-.12*	.01	-.10*	-.06	-.07	-.05	-.08

Table 62 (continued)

		Residuals: Attitudes and Values				Students' Ratings	
		Resid. Self-Confid.	Resid. Val. on Equality	Resid. Concern for Others	Resid. Value on Self-dir.	Enjoy-ment of Class	Friends in Class
Residuals: Attitudes and Values							
Residual Value on Equality	**Boys**	.17*					
	Girls	.10					
	Total	.15*					
Res. Concern for Others	**Boys**	.22*	.17*				
	Girls	.18*	.19*				
	Total	.21*	.20*				
Residual Value on Self-dir.	**Boys**	.05	.15*	-.11			
	Girls	.16*	.14*	.03			
	Total	.10*	.14*	-.05			
Students' Ratings							
Enjoyment of Class	**Boys**	.20*	.02	.12	-.21*		
	Girls	.15*	-.03	.03	-.14*		
	Total	.19*	.03	.10*	-.19*		
Friends in Class	**Boys**	.08	.05	.09	-.12	.16*	
	Girls	.01	.05	-.03	-.04	.11	
	Total	.05	.06	.04	-.08	.14*	
Perceived Class Disruptiveness	**Boys**	-.05	.07	-.02	.12	-.13	-.08
	Girls	.02	-.14*	-.12	-.01	-.04	.01
	Total	-.02	-.03	-.07	.06	-.09	-.04

Table 62 (continued)

		Orientation/Motive Factors				Prior Cognitive Skills and Self-Esteem				
		Pref. for Class with Autonomy	Compliant, Conforming Or.	Pers. Control Intr. Mot.	Achievement motivation	Prior Achievement	Pre-Creativity	Pre-Inquiry Skill	Pre-Writing Quality	Pre-Self-Esteem
Teachers' Ratings of Students										
Perseverance, Social Maturity	Boys	-.14*	-.14*	.26*	-.03	.45*	.23*	.22*	.34*	.23*
	Girls	-.06	-.10	.22*	.13*	.45*	.19*	.17*	.20*	.29*
	Total	-.13*	-.09	.27*	.06	.45*	.27*	.19*	.30*	.25*
Activity Level, Curiosity	Boys	.03	-.15*	.14*	.13	.27*	.06	.12	.18*	.14*
	Girls	-.04	-.22*	.20*	.15*	.37*	.20*	.19*	.23*	.11
	Total	.02	-.20*	.14*	.13*	.29*	.06	.15*	.16*	.12*
Miscellaneous Measures										
Socio-Economic Status	Boys	.01	-.20*	.19*	.04	.37*	.14*	.21*	.22*	.24*
	Girls	.03	-.21*	.18*	.05	.30*	.13*	.20*	.14*	.14*
	Total	.02	-.20*	.18*	.05	.33*	.13*	.20*	.18*	.19*
Sex	Total	-.12*	.11*	.14*	.04	.09	.29*	.00	.17*	.01

Table 62 (continued)

		Prior Attitudes and Values				Residuals: Cognitive Skills and Self-Esteem				
		Pre-Self Confi-dence	Pre Value on Equality	Pre-Concern for Others	Pre-Value on Self-dir.	Res. Ach. Test Performance	Residual Creativity	Residual Inquiry Skill	Residual Writing Quality	Residual Self-Esteem
Teachers' Ratings of Students										
Perseverance, Social Maturity	Boys	.30*	.08	.14*	-.02	.22*	.12	.24*	.24*	.17*
	Girls	.27*	.03	.08	-.04	.18*	.06	.20*	.22*	.32*
	Total	.30*	.04	.13*	-.06	.21*	.11*	.23*	.26*	.23*
Activity Level, Curiosity	Boys	.17*	.11	.10	.03	.12	.09	.11	.11	.09
	Girls	.21*	.09	.26*	-.01	-.03	.01	.11	.11	.17*
	Total	.16*	.11*	.15*	.04	.03	.02	.09	.06	.13*
Miscellaneous Measures										
Socio-Economic Status	Boys	.24*	.17*	.16*	.04	.11	.10	.16*	.08	.09
	Girls	.17*	.16*	.17*	-.02	.12	.17*	.08*	.12	.15*
	Total	.21*	.17*	.17*	.01	.12*	.13*	.12	.10*	.12*
Sex	Total	.10*	-.05	.11*	-.12*	.08	.13*	.09	.17*	-.02

Table 62 (continued)

		Residuals: Attitudes and Values				Students' Ratings		
		Resid. Self-Confid.	Resid. Value on Equality	Resid. Concern Others	Resid. Value on Self-dir.	Enjoyment of Class	Friends in Class	Perceived Class Disruptiveness
Teachers' Ratings of Students								
Perseverance, Social Maturity	Boys	.14*	.00	.18*	-.10	.19*	.00	-.13*
	Girls	.17*	.05	.11	.06	.19*	-.06	-.07
	Total	.17*	.05	.17*	-.04	.23*	-.02	-.10*
Activity Level, Curiosity	Boys	.10	.01	.13	.06	.03	.12	-.03
	Girls	.15*	.03	.17*	.01	.10	.02	-.07
	Total	.10*	-.02	.11*	.05	.02	.06	-.05
Miscellaneous Measures								
Socio-Economic Status	Boys	.10	.00	.13	.06	.03	-.05	-.13*
	Girls	.13	.06	.12	.10	.02	-.05	-.12
	Total	.12*	.03	.12*	.08	.02	-.05	-.13*
Sex	Total	.10*	.13*	.13*	-.06	.19*	.03	.00

Table 62 (continued)

		Teachers' Ratings		Miscellaneous Measures
		Persev., Social Maturity	Activity Level, Curiosity	SES
Teachers' Ratings of Students				
Activity Level, Curiosity	Boys	.08		
	Girls	.20*		
	Total	.08		
Miscellaneous Measures				
Socio-Economic Status	Boys	.21*	.18*	
	Girls	.17*	.11	
	Total	.18*	.14*	
Sex	Total	.24*	-.22*	.01

Note: Boys' Ns = 500-645; girls' Ns = 520-650; total Ns = 1035-1298

*p <.001

Analysis of Variance Summary Tables

Tables 63-68 contain abbreviations for the variables involved in the various analyses of variance. Following are the full names represented by these abbreviations, in the order of their appearance:

Outcome variables

RESACH - Residual achievement test performance

RESCREAT - Residual creativity

RESINQ - Residual inquiry skill

RESQUAL - Residual writing quality

RESSE - Residual self-esteem

RESSCON - Residual self-confidence

RESEQV - Residual value on equality

RESCONO - Residual concern for others

RESSDIR - Residual value on self-direction

ENJOY - Enjoyment of class

FRIENDS - Friends in class (social involvement)

DISRUPT - Perceived class disruptiveness

PERSEV - Perseverance, social maturity

ACTIVE - Activity/curiosity

READING - Reading comprehension, post - achievement test subscore (Tables 67-68 only)

MATH CONC - Mathematics concepts, post - achievement test subscore (Tables 67-68 only)

MATH PROB - Mathematics problems, post - achievement test subscore (Tables 67-68 only)

ACHIEVE - Post - achievement test performance factor score (Tables 67-68 only)

CREATIVITY - Post - creativity factor score (Tables 67-68 only)

INQUIRY SK - Post - inquiry skill factor score (Tables 67-68 only)

WRITING Q - Post - writing quality score (Tables 67-68 only)

Class variables

CL CLUST - Classroom Cluster

WARMTH - Warmth, friendliness vs. coldness

CCONTRL - Control, orderliness vs. lack of control, permissiveness

COMMON - Commonality vs. variety of activities

NONIND - Nonindividualized vs. individualized teacher-student interaction

PARTIC - Energetic encouragement of academic participation

EXPRES - Emphasis on student expressiveness

Child Variables

CH CLUST - Child cluster

CLAUT - Preference for class with autonomy

CNFORM - Compliant, conforming orientation

CONTRL - Personal control, intrinsic motivation

ACHMOT - Achievement motivation

SES - Socioeconomic status

PRE READ - Reading comprehension, pre - achievement test subscore (Tables 67-68 only)

PRE MCON - Mathematics concepts, pre - achievement test subscore (Tables 67-68 only)

PRE MPRO - Mathematics problems, pre - achievement test subscore (Tables 67-68 only)

PRE ACH - Pre - achievement test performance factor score (Tables 67-68 only)

PRE CREA - Pre - creativity factor score (Tables 67-68 only)

PRE INQ - Pre - inquiry skill factor score (Tables 67-68 only)

PRE WRIT - Pre - writing quality score (Tables 67-68 only)

Table 63

Summary of Analyses of Variance Relating Child Cluster, Classroom Cluster, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. x Ch.		Sex		Cl. x Sex		Ch. x Sex		Cl. x Ch. x S	
			F	P	F	P	F	P	F	P	F	P	F	P	F	P
RESACH	CL CLUST	CH CLUST	2.52	.043	0.85	.567	1.29	.246	3.48	.066	0.36	.874	0.26	.778	1.31	.239
RESCREAT	CL CLUST	CH CLUST	1.64	.168	7.11	.002	2.21	.024	5.83	.019	0.76	.583	0.01	.995	0.61	.804
RESINQ	CL CLUST	CH CLUST	0.53	.753	13.28	.000	0.69	.730	0.39	.540	1.93	.108	1.59	.208	0.81	.622
RESQUAL	CL CLUST	CH CLUST	1.50	.209	14.16	.000	0.74	.690	7.22	.010	0.78	.573	1.93	.149	0.78	.645
RESSE	CL CLUST	CH CLUST	0.37	.868	3.33	.039	0.61	.803	0.04	.839	2.30	.060	0.36	.704	1.75	.082
RESSCON	CL CLUST	CH CLUST	0.23	.947	2.20	.114	0.66	.760	4.22	.043	0.83	.536	0.58	.568	1.78	.075
RESEOV	CL CLUST	CH CLUST	0.39	.852	10.17	.000	1.54	.138	13.41	.001	0.13	.982	0.00	.997	2.47	.012
RESCONO	CL CLUST	CH CLUST	1.20	.326	3.39	.037	1.49	.157	12.32	.001	1.73	.148	0.35	.713	1.93	.052
RESSDIR	CL CLUST	CH CLUST	0.90	.507	3.56	.032	0.74	.687	2.78	.099	0.83	.538	0.14	.871	1.11	.363
ENJOY	CL CLUST	CH CLUST	0.45	.811	9.66	.000	0.34	.966	26.10	.000	0.88	.505	0.13	.882	1.60	.121
FRIENDS	CL CLUST	CH CLUST	0.32	.897	1.20	.307	0.73	.697	0.13	.721	0.13	.984	5.91	.004	0.77	.654
DISRUPT	CL CLUST	CH CLUST	2.51	.043	2.20	.115	0.87	.566	1.87	.175	0.63	.681	2.62	.076	1.65	.104
PERSEV	CL CLUST	CH CLUST	0.93	.526	39.10	.000	0.52	.873	22.73	.000	0.48	.793	0.49	.623	1.83	.066
ACTIVE	CL CLUST	CH CLUST	2.53	.042	35.47	.000	2.80	.005	33.70	.000	3.17	.016	0.97	.616	1.32	.232

Table 64

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. x Ch.		Sex		Cl. x Sex		Ch. x Sex		Cl. x Ch. x S	
			F	p	F	p	F	p	F	p	F	p	F	p	F	p
RESACH	WARMTH	CLAUT	2.27	.112	0.18	.841	0.57	.687	5.14	.026	0.10	.904	0.27	.764	1.60	.179
RESCREAT	WARMTH	CLAUT	2.76	.072	1.03	.361	1.02	.402	9.52	.004	0.36	.703	0.60	.554	1.43	.229
RESINQ	WARMTH	CLAUT	1.86	.166	1.24	.295	0.45	.775	1.26	.267	0.95	.604	0.17	.842	1.60	.180
RESQUAL	WARMTH	CLAUT	1.27	.289	0.62	.544	0.63	.643	27.08	.000	5.14	.010	1.17	.315	0.70	.598
RESSE	WARMTH	CLAUT	2.88	.064	0.50	.616	0.25	.910	0.24	.635	1.42	.250	0.35	.713	1.36	.254
RESSCON	WARMTH	CLAUT	0.56	.581	1.47	.235	0.66	.627	7.12	.010	0.15	.865	0.34	.720	1.42	.231
RESEQV	WARMTH	CLAUT	0.81	.545	0.20	.817	0.47	.757	20.55	.000	0.36	.708	0.94	.602	2.29	.065
RESCONO	WARMTH	CLAUT	0.40	.681	0.61	.551	1.15	.337	8.92	.005	2.44	.096	4.22	.017	0.48	.757
RESSDIR	WARMTH	CLAUT	0.64	.536	4.45	.014	1.25	.295	0.80	.621	1.34	.271	0.21	.811	1.76	.142
ENJOY	WARMTH	CLAUT	1.07	.353	6.58	.002	1.39	.242	19.74	.000	0.29	.753	1.99	.140	0.51	.733
FRIENDS	WARMTH	CLAUT	0.61	.551	0.44	.648	0.93	.547	0.91	.653	0.33	.726	0.68	.515	0.27	.895
DISRUPT	WARMTH	CLAUT	2.57	.086	0.72	.504	0.30	.878	0.00	.989	1.87	.163	0.04	.960	0.70	.595
PERSEV	WARMTH	CLAUT	1.29	.285	7.10	.002	2.06	.092	32.96	.000	1.21	.308	1.83	.164	0.92	.545
ACTIVE	WARMTH	CLAUT	0.60	.555	0.31	.737	1.11	.356	36.17	.000	1.45	.243	1.68	.190	0.21	.928
RESACH	CCNTRL	CLAUT	6.17	.004	0.20	.823	1.43	.230	5.23	.025	0.24	.789	0.27	.768	4.12	.004
RESCREAT	CCNTRL	CLAUT	3.36	.042	1.03	.362	0.06	.990	9.48	.004	0.12	.891	0.66	.524	2.25	.069
RESINQ	CCNTRL	CLAUT	1.71	.190	1.26	.287	0.14	.966	1.30	.259	1.99	.146	0.16	.852	0.47	.758
RESQUAL	CCNTRL	CLAUT	2.40	.100	0.64	.536	0.96	.567	22.45	.000	0.41	.674	1.18	.312	0.64	.638
RESSE	CCNTRL	CLAUT	0.63	.541	0.60	.555	2.56	.043	0.25	.626	3.66	.032	0.38	.691	0.90	.528
RESSCON	CCNTRL	CLAUT	0.16	.853	1.48	.230	1.05	.388	8.28	.006	2.78	.071	0.31	.739	0.35	.843
RESEQV	CCNTRL	CLAUT	4.16	.021	0.22	.802	0.70	.598	20.55	.000	0.08	.919	1.05	.354	1.70	.156
RESCONO	CCNTRL	CLAUT	0.06	.941	0.55	.581	0.52	.722	8.54	.005	0.70	.506	4.14	.019	0.41	.800
RESSDIR	CCNTRL	CLAUT	0.28	.764	4.70	.011	2.85	.028	0.79	.617	1.28	.287	0.23	.798	2.79	.030
ENJOY	CCNTRL	CLAUT	3.01	.057	6.91	.002	4.20	.004	20.15	.000	0.82	.549	2.09	.128	1.12	.352
FRIENDS	CCNTRL	CLAUT	2.08	.134	0.48	.623	1.22	.309	0.88	.646	0.12	.884	0.63	.540	0.58	.682
DISRUPT	CCNTRL	CLAUT	4.41	.017	0.73	.510	0.16	.957	0.01	.936	0.54	.593	0.07	.936	2.22	.072
PERSEV	CCNTRL	CLAUT	1.79	.176	6.80	.002	1.01	.408	33.55	.000	1.69	.193	1.97	.144	2.66	.037
ACTIVE	CCNTRL	CLAUT	4.23	.020	0.39	.681	1.72	.152	34.59	.000	0.93	.594	1.75	.177	1.16	.333
RESACH	COMMON	CLAUT	0.01	.989	0.22	.809	1.79	.137	5.24	.025	0.75	.518	0.27	.764	2.08	.088
RESCREAT	COMMON	CLAUT	0.03	.975	1.11	.334	0.90	.528	9.76	.003	0.36	.704	0.66	.523	1.84	.126
RESINQ	COMMON	CLAUT	1.00	.377	1.27	.286	0.24	.917	1.24	.271	0.89	.582	0.15	.862	0.74	.571
RESQUAL	COMMON	CLAUT	0.08	.926	0.58	.569	0.25	.906	22.62	.000	0.61	.552	1.15	.323	0.23	.917
RESSE	COMMON	CLAUT	0.09	.911	0.49	.617	0.77	.551	0.26	.617	0.08	.924	0.34	.716	0.27	.896
RESSCON	COMMON	CLAUT	1.15	.325	1.44	.240	0.59	.675	7.48	.009	0.61	.550	0.29	.754	0.71	.590
RESEQV	COMMON	CLAUT	0.12	.891	0.23	.796	1.66	.164	20.50	.000	0.35	.713	0.93	.599	1.57	.188
RESCONO	COMMON	CLAUT	0.86	.566	0.59	.563	1.18	.323	8.25	.006	0.02	.978	4.14	.019	0.41	.806
RESSDIR	COMMON	CLAUT	5.82	.006	4.63	.012	1.63	.171	0.74	.603	0.43	.660	0.20	.822	0.90	.530
ENJOY	COMMON	CLAUT	0.62	.550	6.28	.003	0.57	.686	24.78	.000	5.87	.006	2.03	.136	0.36	.841
FRIENDS	COMMON	CLAUT	0.13	.880	0.45	.644	0.32	.863	1.06	.310	2.81	.068	0.67	.520	0.85	.501
DISRUPT	COMMON	CLAUT	0.65	.533	0.74	.517	0.41	.805	0.00	.991	2.66	.079	0.05	.947	2.16	.079
PERSEV	COMMON	CLAUT	0.66	.528	6.69	.002	0.55	.705	33.76	.000	1.81	.173	1.82	.166	0.66	.627
ACTIVE	COMMON	CLAUT	0.06	.944	0.36	.706	1.76	.143	34.30	.000	0.37	.696	1.71	.185	0.34	.849

Table 64 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. x Ch.		Sex		Cl. x Sex		Ch. x Sex		Cl. x Ch. x S	
			F	p	F	p	F	p	F	p	F	p	F	p	F	p
RESACH	NONIND	CLAUT	0.24	.789	0.16	.852	1.13	.349	5.26	.025	0.52	.606	0.29	.751	0.39	.817
RESCREAT	NONIND	CLAUT	0.34	.718	1.05	.355	0.56	.695	9.66	.003	0.15	.863	0.53	.595	0.75	.564
RESINQ	NONIND	CLAUT	1.41	.253	1.39	.253	1.27	.285	1.10	.301	0.43	.660	0.14	.874	0.42	.797
RESQUAL	NONIND	CLAUT	1.33	.273	0.58	.567	0.44	.784	22.01	.000	0.45	.648	1.09	.340	2.15	.079
RESSE	NONIND	CLAUT	0.28	.762	0.49	.622	0.32	.862	0.28	.606	0.28	.758	0.34	.718	0.74	.572
RESSCON	NONIND	CLAUT	0.01	.990	1.39	.252	0.36	.839	7.50	.009	0.74	.514	0.34	.715	1.30	.274
RESEQV	NONIND	CLAUT	1.51	.231	0.23	.800	0.55	.700	20.79	.000	0.34	.722	0.93	.599	0.33	.859
RESCONO	NONIND	CLAUT	0.08	.925	0.56	.580	0.26	.902	8.59	.005	0.87	.573	4.12	.019	0.11	.976
RESSDIR	NONIND	CLAUT	1.00	.623	4.39	.015	0.33	.858	0.71	.592	0.01	.987	0.20	.822	0.95	.559
ENJOY	NONIND	CLAUT	0.10	.900	6.35	.003	1.07	.378	21.98	.000	2.55	.087	2.06	.131	1.09	.366
FRIENDS	NONIND	CLAUT	0.45	.649	0.43	.656	0.51	.730	0.87	.642	0.04	.960	0.68	.512	1.02	.400
DISRUPT	NONIND	CLAUT	0.77	.526	0.82	.552	2.44	.051	0.00	.977	5.18	.009	0.04	.963	1.62	.176
PERSEV	NONIND	CLAUT	0.19	.831	6.64	.002	0.40	.810	32.52	.000	1.69	.194	1.80	.169	0.68	.612
ACTIVE	NONIND	CLAUT	1.58	.216	0.34	.717	0.54	.713	34.86	.000	1.22	.303	1.69	.188	1.14	.341
RESACH	PART[illegible]	CLAUT	0.57	.576	0.16	.850	1.65	.168	5.26	.025	1.08	.348	0.31	.736	0.79	.538
RESCREAT	PART[illegible]	CLAUT	3.67	.032	1.11	.333	2.08	.088	9.66	.003	0.85	.563	0.56	.580	1.09	.366
RESINQ	PARTIC	CLAUT	0.58	.569	1.25	.291	1.29	.279	1.35	.250	2.46	.094	0.17	.846	1.40	.240
RESQUAL	PARTIC	CLAUT	0.45	.648	0.59	.560	0.60	.668	22.37	.000	0.34	.720	1.12	.331	0.11	.975
RESSE	PARTIC	CLAUT	1.14	.327	0.50	.615	0.58	.682	0.24	.630	0.35	.710	0.42	.663	3.03	.021
RESSCON	PARTIC	CLAUT	0.17	.844	1.50	.227	0.77	.547	7.21	.010	0.11	.896	0.34	.719	1.55	.192
RESEQV	PARTIC	CLAUT	0.33	.723	0.20	.819	0.69	.601	20.79	.000	0.79	.535	0.97	.617	0.43	.791
RESCONO	PARTIC	CLAUT	0.10	.908	0.55	.583	0.56	.698	9.45	.004	2.32	.107	4.42	.014	1.22	.306
RESSDIR	PARTIC	CLAUT	0.00	****	4.87	.010	2.00	.100	0.67	.577	0.86	.565	0.18	.838	0.41	.802
ENJOY	PARTIC	CLAUT	3.44	.039	6.65	.002	1.23	.302	19.72	.000	0.59	.561	2.18	.116	1.18	.323
FRIENDS	PARTIC	CLAUT	1.71	.190	0.41	.669	1.79	.136	0.92	.656	0.82	.549	0.70	.505	0.59	.674
DISRUPT	PARTIC	CLAUT	0.70	.506	0.74	.515	0.48	.750	0.00	.952	0.28	.761	0.04	.962	2.57	.042
PERSEV	PARTIC	CLAUT	0.37	.695	7.40	.001	2.99	.022	32.55	.000	0.92	.590	2.03	.135	2.17	.077
ACTIVE	PARTIC	CLAUT	2.78	.071	0.36	.705	2.34	.060	33.59	.000	0.01	.990	1.66	.194	0.16	.954
RESACH	EXPRES	CLAUT	0.72	.506	0.18	.839	0.42	.796	5.36	.024	0.75	.520	0.30	.743	0.38	.823
RESCREAT	EXPRES	CLAUT	1.37	.262	1.00	.372	0.43	.791	9.72	.003	0.70	.506	0.56	.581	0.22	.923
RESINQ	EXPRES	CLAUT	0.75	.518	1.34	.266	0.80	.528	1.11	.299	0.09	.909	0.13	.878	1.12	.351
RESQUAL	EXPRES	CLAUT	1.11	.339	0.60	.557	0.62	.654	22.90	.000	0.79	.537	1.09	.340	0.77	.550
RESSE	EXPRES	CLAUT	0.48	.628	0.51	.606	0.64	.636	0.28	.608	0.16	.857	0.32	.734	1.33	.265
RESSCON	EXPRES	CLAUT	0.34	.719	1.49	.229	0.74	.570	7.38	.009	0.67	.520	0.33	.724	0.89	.525
RESEQV	EXPRES	CLAUT	0.25	.781	0.21	.810	0.74	.568	20.47	.000	0.29	.751	1.01	.369	2.54	.044
RESCONO	EXPRES	CLAUT	1.49	.235	0.57	.573	0.62	.652	9.01	.005	1.35	.268	4.11	.019	0.05	.992
RESSDIR	EXPRES	CLAUT	1.20	.311	4.36	.015	0.77	.549	0.68	.580	0.35	.711	0.20	.823	0.74	.568
ENJOY	EXPRES	CLAUT	0.02	.983	6.30	.003	0.47	.757	19.66	.000	0.74	.512	2.36	.098	2.14	.081
FRIENDS	EXPRES	CLAUT	0.11	.898	0.40	.676	3.66	.008	0.87	.642	0.16	.854	0.64	.534	1.73	.149
DISRUPT	EXPRES	CLAUT	0.25	.784	0.76	.525	0.47	.761	0.00	.980	2.24	.116	0.04	.961	1.00	.412
PERSEV	EXPRES	CLAUT	2.21	.120	6.58	.003	0.40	.812	43.17	.000	8.33	.001	1.93	.149	1.73	.148
ACTIVE	EXPRES	CLAUT	6.81	.003	0.35	.710	0.43	.791	34.72	.000	0.97	.610	1.67	.192	0.85	.501

Table 64 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	Class Var. F	Class Var. P	Child Var. F	Child Var. P	Cl. x Ch. F	Cl. x Ch. P	Sex F	Sex P	Cl. x Sex F	Cl. x Sex P	Ch. x Sex F	Ch. x Sex P	Cl. x Ch. x S F	Cl. x Ch. x S P
			F Values and Associated Probability Levels for All Effects													
RESACH	WARMTH	CNFORM	1.88	.162	0.10	.902	0.44	.780	11.45	.002	0.47	.635	0.32	.734	0.82	.519
RESCREAT	WARMTH	CNFORM	3.04	.056	0.81	.549	0.12	.972	8.29	.006	0.23	.796	0.39	.682	0.67	.615
RESINQ	WARMTH	CNFORM	0.42	.666	3.68	.028	0.50	.737	5.79	.019	0.09	.915	3.89	.023	0.45	.773
RESQUAL	WARMTH	CNFORM	0.42	.663	8.76	.001	1.21	.312	23.87	.000	4.28	.019	0.93	.601	1.35	.257
RESSE	WARMTH	CNFORM	1.01	.372	0.24	.787	0.33	.856	0.84	.633	2.00	.144	0.67	.518	2.35	.059
RESSCON	WARMTH	CNFORM	0.61	.553	1.36	.259	0.12	.971	9.89	.003	0.96	.606	0.64	.535	0.56	.699
RESEQV	WARMTH	CNFORM	1.64	.203	5.94	.004	0.21	.930	24.35	.000	0.57	.574	0.02	.983	2.69	.035
RESCONO	WARMTH	CNFORM	0.18	.836	9.23	.000	1.01	.408	21.59	.000	1.24	.298	0.88	.580	0.44	.785
RESSDIR	WARMTH	CNFORM	1.01	.374	6.68	.002	0.10	.979	6.59	.013	0.06	.941	0.54	.589	0.46	.766
ENJOY	WARMTH	CNFORM	2.36	.103	6.42	.003	0.48	.751	28.70	.000	0.98	.614	0.33	.726	0.58	.683
FRIENDS	WARMTH	CNFORM	1.34	.272	1.04	.357	2.84	.028	1.33	.253	0.38	.690	0.20	.822	0.94	.554
DISRUPT	WARMTH	CNFORM	1.70	.193	0.57	.574	0.36	.838	0.05	.825	3.46	.038	0.46	.636	0.75	.565
PERSEV	WARMTH	CNFORM	0.64	.536	1.93	.148	0.60	.670	57.29	.000	2.16	.125	0.89	.583	0.65	.634
ACTIVE	WARMTH	CNFORM	0.09	.918	25.14	.000	1.21	.313	22.81	.000	2.53	.088	0.58	.567	1.49	.209
RESACH	CCNTRL	CNFORM	8.78	.001	0.10	.906	1.73	.148	11.14	.002	0.04	.959	0.33	.722	0.51	.731
RESCREAT	CCNTRL	CNFORM	2.55	.087	0.91	.591	3.24	.015	8.23	.006	0.26	.776	0.40	.677	1.12	.354
RESINQ	CCNTRL	CNFORM	3.58	.035	3.75	.026	0.58	.684	6.00	.017	0.44	.651	3.94	.022	1.02	.401
RESQUAL	CCNTRL	CNFORM	2.40	.100	8.71	.001	0.64	.636	20.15	.000	0.31	.742	0.98	.620	1.30	.276
RESSE	CCNTRL	CNFORM	1.19	.315	0.22	.803	0.05	.992	0.79	.618	0.49	.621	0.58	.567	0.46	.769
RESSCON	CCNTRL	CNFORM	0.24	.793	1.40	.251	0.21	.929	10.54	.002	2.21	.119	0.63	.542	2.20	.074
RESEQV	CCNTRL	CNFORM	0.89	.581	6.50	.003	2.15	.080	24.21	.000	0.19	.831	0.01	.989	0.60	.669
RESCONO	CCNTRL	CNFORM	0.50	.617	9.25	.000	0.75	.565	22.06	.000	1.79	.177	0.93	.600	0.59	.671
RESSDIR	CCNTRL	CNFORM	2.00	.145	7.45	.001	1.96	.107	6.55	.013	0.50	.617	0.60	.557	1.47	.217
ENJOY	CCNTRL	CNFORM	1.71	.190	6.76	.002	1.34	.261	28.32	.000	1.05	.361	0.29	.753	0.72	.580
FRIENDS	CCNTRL	CNFORM	0.64	.537	0.94	.604	0.33	.860	1.41	.240	0.60	.558	0.16	.853	0.18	.945
DISRUPT	CCNTRL	CNFORM	2.93	.062	0.60	.554	1.64	.169	0.01	.904	1.17	.319	0.45	.643	2.50	.047
PERSEV	CCNTRL	CNFORM	1.58	.216	2.11	.125	2.94	.024	52.42	.000	0.13	.881	0.90	.587	1.07	.377
ACTIVE	CCNTRL	CNFORM	4.05	.023	24.78	.000	0.74	.573	20.50	.000	0.52	.601	0.59	.564	0.58	.682
RESACH	COMMON	CNFORM	0.50	.616	0.10	.908	0.67	.616	11.31	.002	0.62	.547	0.30	.745	0.86	.507
RESCREAT	COMMON	CNFORM	0.10	.905	0.79	.539	0.97	.569	8.35	.006	0.09	.913	0.40	.675	0.73	.575
RESINQ	COMMON	CNFORM	0.35	.711	3.64	.029	0.20	.935	6.09	.016	1.15	.325	4.04	.020	0.96	.566
RESQUAL	COMMON	CNFORM	0.10	.904	8.61	.001	0.68	.608	22.25	.000	2.58	.085	0.96	.611	0.81	.523
RESSE	COMMON	CNFORM	1.59	.214	0.28	.764	1.15	.336	0.80	.621	0.55	.587	0.60	.554	0.37	.833
RESSCON	COMMON	CNFORM	0.99	.620	1.47	.233	1.39	.241	9.54	.004	0.19	.829	0.60	.555	0.36	.840
RESEQV	COMMON	CNFORM	0.05	.948	6.06	.004	0.69	.602	24.05	.000	0.04	.959	0.02	.981	0.96	.567
RESCONO	COMMON	CNFORM	1.86	.164	9.38	.000	1.41	.236	20.86	.000	0.58	.569	0.90	.587	1.15	.338
RESSDIR	COMMON	CNFORM	2.84	.067	7.11	.002	1.23	.303	7.37	.007	2.05	.138	0.57	.575	0.57	.685
ENJOY	COMMON	CNFORM	0.81	.545	6.62	.002	0.83	.511	34.58	.000	5.66	.006	0.32	.729	0.53	.715
FRIENDS	COMMON	CNFORM	0.17	.847	1.01	.371	0.79	.539	1.63	.206	2.45	.095	0.17	.844	1.28	.284
DISRUPT	COMMON	CNFORM	0.08	.920	0.64	.535	3.09	.019	0.04	.846	4.91	.011	0.44	.649	0.24	.912
PERSEV	COMMON	CNFORM	1.22	.303	2.10	.126	1.83	.129	57.89	.000	2.35	.105	0.94	.604	0.46	.766
ACTIVE	COMMON	CNFORM	0.61	.555	25.78	.000	1.99	.101	21.16	.000	0.88	.576	0.60	.554	1.25	.294

Table 64 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. × Ch.		Sex		Cl. × Sex		Ch. × Sex		Cl. × Ch. × S	
			F	p	F	p	F	p	F	p	F	p	F	p	F	p
RESACH	NONIND	CNFORM	0.46	.640	0.11	.895	0.31	.873	11.46	.002	1.20	.309	0.38	.690	1.39	.242
RESCREAT	NONIND	CNFORM	0.40	.680	0.84	.563	2.34	.060	8.51	.006	0.41	.670	0.38	.688	0.73	.574
RESINQ	NONIND	CNFORM	1.57	.217	3.64	.029	0.44	.782	5.75	.019	0.40	.681	3.95	.022	0.56	.692
RESQUAL	NONIND	CNFORM	1.36	.267	9.44	.000	2.12	.084	20.12	.000	0.25	.779	0.99	.623	0.77	.548
RESSE	NONIND	CNFORM	1.28	.286	0.20	.818	1.60	.179	0.94	.662	1.16	.324	0.53	.597	1.06	.379
RESSCON	NONIND	CNFORM	0.18	.836	1.42	.245	0.83	.513	9.96	.003	0.96	.606	0.64	.536	1.25	.293
RESEQV	NONIND	CNFORM	0.39	.684	6.00	.004	0.97	.568	24.42	.000	0.19	.827	0.02	.983	0.39	.814
RESCONO	NONIND	CNFORM	1.26	.294	8.90	.001	0.25	.908	20.80	.000	0.16	.852	0.92	.596	0.32	.865
RESSDIR	NONIND	CNFORM	0.60	.556	6.84	.002	0.66	.628	7.07	.010	1.34	.270	0.55	.582	0.77	.552
ENJOY	NONIND	CNFORM	0.04	.959	6.32	.003	0.28	.888	27.63	.000	0.15	.858	0.34	.717	1.13	.346
FRIENDS	NONIND	CNFORM	0.89	.581	0.97	.617	0.50	.740	1.39	.243	0.09	.913	0.16	.852	0.32	.865
DISRUPT	NONIND	CNFORM	1.51	.231	0.55	.587	0.86	.508	0.02	.877	1.46	.241	0.47	.635	0.59	.672
PERSEV	NONIND	CNFORM	0.88	.576	1.96	.145	1.33	.263	56.71	.000	2.57	.085	1.04	.359	2.08	.089
ACTIVE	NONIND	CNFORM	0.98	.616	24.53	.000	0.45	.777	20.80	.000	1.28	.288	0.60	.557	0.71	.588
RESACH	PARTIC	CNFORM	0.39	.687	0.10	.904	0.21	.929	11.26	.002	0.06	.942	0.31	.741	1.04	.389
RESCREAT	PARTIC	CNFORM	3.70	.031	0.84	.564	1.65	.167	8.73	.005	2.43	.097	0.46	.639	1.64	.170
RESINQ	PARTIC	CNFORM	0.04	.961	3.86	.024	0.97	.570	6.65	.013	2.36	.103	3.85	.024	0.17	.951
RESQUAL	PARTIC	CNFORM	0.08	.919	8.90	.001	1.19	.320	21.01	.000	0.83	.554	0.94	.604	1.52	.202
RESSE	PARTIC	CNFORM	0.18	.835	0.24	.791	0.73	.574	0.78	.616	1.05	.359	0.59	.563	0.56	.696
RESSCON	PARTIC	CNFORM	0.15	.858	1.39	.253	0.44	.781	9.49	.004	0.17	.849	0.60	.558	0.81	.523
RESEQV	PARTIC	CNFORM	2.93	.062	6.76	.002	2.68	.036	25.10	.000	1.49	.234	0.01	.989	1.18	.322
RESCONO	PARTIC	CNFORM	0.10	.905	9.93	.000	2.16	.079	21.48	.000	0.73	.510	0.92	.595	0.96	.563
RESSDIR	PARTIC	CNFORM	0.12	.887	6.97	.002	1.17	.328	6.53	.013	0.35	.714	0.63	.541	1.66	.164
ENJOY	PARTIC	CNFORM	3.34	.043	6.82	.002	1.29	.278	28.17	.000	0.73	.508	0.30	.747	0.43	.787
FRIENDS	PARTIC	CNFORM	1.92	.155	1.07	.347	1.65	.168	1.41	.240	0.27	.769	0.19	.829	0.85	.501
DISRUPT	PARTIC	CNFORM	0.12	.889	0.54	.593	1.15	.339	0.03	.853	0.76	.525	0.41	.671	1.26	.289
PERSEV	PARTIC	CNFORM	0.10	.907	1.96	.144	0.80	.532	57.44	.000	2.07	.136	0.89	.583	0.10	.980
ACTIVE	PARTIC	CNFORM	1.77	.179	24.26	.000	0.29	.885	20.57	.000	0.46	.637	0.69	.511	2.23	.071
RESACH	EXPRES	CNFORM	0.45	.645	0.10	.907	0.71	.591	11.52	.002	0.41	.671	0.33	.727	0.70	.595
RESCREAT	EXPRES	CNFORM	1.20	.311	0.81	.550	0.43	.791	8.30	.006	0.08	.922	0.40	.679	1.46	.218
RESINQ	EXPRES	CNFORM	1.20	.309	3.63	.030	0.46	.768	5.83	.019	1.05	.360	3.89	.023	0.84	.505
RESQUAL	EXPRES	CNFORM	0.36	.707	8.88	.001	1.69	.158	20.27	.000	0.27	.771	0.95	.608	0.88	.516
RESSE	EXPRES	CNFORM	0.39	.686	0.22	.803	0.35	.844	0.82	.627	0.01	.992	0.64	.536	2.22	.071
RESSCON	EXPRES	CNFORM	0.04	.959	1.38	.256	1.83	.129	9.34	.004	0.01	.994	0.61	.549	0.31	.872
RESEQV	EXPRES	CNFORM	0.59	.564	5.99	.004	0.80	.528	24.57	.000	0.57	.573	0.03	.976	1.23	.304
RESCONO	EXPRES	CNFORM	0.44	.654	8.94	.001	0.61	.658	21.77	.000	1.06	.354	0.88	.580	1.11	.356
RESSDIR	EXPRES	CNFORM	2.15	.126	6.93	.002	0.80	.528	6.56	.013	0.55	.588	0.60	.558	0.90	.532
ENJOY	EXPRES	CNFORM	0.30	.748	6.95	.002	1.84	.127	28.25	.000	0.95	.605	0.31	.739	1.06	.381
FRIENDS	EXPRES	CNFORM	0.02	.976	1.09	.340	1.37	.249	1.38	.244	0.24	.794	0.19	.833	1.04	.390
DISRUPT	EXPRES	CNFORM	0.30	.749	0.53	.596	0.73	.574	0.03	.860	2.48	.093	0.43	.658	0.37	.832
PERSEV	EXPRES	CNFORM	0.85	.562	1.83	.163	1.11	.358	63.60	.000	4.69	.014	0.88	.578	1.54	.196
ACTIVE	EXPRES	CNFORM	3.78	.029	24.59	.000	0.77	.552	20.28	.000	0.28	.762	0.62	.544	0.36	.835

Table 64 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. x Ch.		Sex		Cl. x Sex		Ch. x Sex		Cl. x Ch. x S	
			F	P	F	P	F	P	F	P	F	P	F	P	F	P
RESACH	WARMTH	CONTRL	1.26	.292	14.16	.000	0.53	.715	5.03	.028	1.82	.171	0.11	.896	0.45	.777
RESCREAT	WARMTH	CONTRL	3.87	.027	3.55	.032	1.12	.354	12.24	.001	0.37	.700	0.15	.865	1.89	.117
RESINQ	WARMTH	CONTRL	1.25	.294	16.00	.000	0.37	.828	1.29	.261	1.14	.330	1.55	.216	2.90	.025
RESQUAL	WARMTH	CONTRL	0.82	.548	10.27	.000	1.30	.276	19.89	.000	5.18	.009	0.16	.851	2.09	.087
RESSE	WARMTH	CONTRL	1.82	.172	7.43	.001	1.48	.213	0.33	.577	4.26	.020	0.57	.570	0.77	.550
RESSCON	WARMTH	CONTRL	0.01	.992	10.35	.000	1.04	.389	4.34	.040	0.54	.593	0.91	.593	2.13	.082
RESEQV	WARMTH	CONTRL	0.59	.564	7.35	.001	0.23	.921	17.58	.000	0.88	.575	0.31	.736	0.53	.714
RESCONO	WARMTH	CONTRL	0.68	.518	15.46	.000	1.97	.105	15.84	.000	1.78	.177	1.05	.354	0.71	.588
RESSDIR	WARMTH	CONTRL	1.81	.174	0.90	.587	0.26	.899	4.95	.029	0.32	.735	2.23	.111	3.53	.010
ENJOY	WARMTH	CONTRL	1.12	.334	3.91	.023	0.15	.961	29.77	.000	0.83	.556	2.13	.122	2.11	.085
FRIENDS	WARMTH	CONTRL	0.27	.772	2.61	.077	1.20	.315	2.22	.139	0.13	.876	1.58	.210	0.93	.547
DISRUPT	WARMTH	CONTRL	1.37	.262	1.32	.270	0.93	.547	0.64	.567	2.71	.076	0.04	.960	0.53	.720
PERSEV	WARMTH	CONTRL	0.57	.573	34.29	.000	0.48	.754	31.57	.000	1.45	.244	0.40	.680	1.45	.221
ACTIVE	WARMTH	CONTRL	0.28	.760	7.38	.001	0.65	.629	29.69	.000	0.84	.558	0.09	.911	1.64	.170
RESACH	CCNTRL	CONTRL	9.61	.001	14.36	.000	0.58	.679	4.67	.034	0.15	.864	0.12	.890	2.09	.087
RESCREAT	CCNTRL	CONTRL	2.69	.076	3.58	.031	0.69	.603	12.11	.001	0.31	.738	0.12	.887	0.48	.754
RESINQ	CCNTRL	CONTRL	2.46	.095	17.54	.000	2.15	.079	1.24	.271	1.62	.207	1.26	.288	1.18	.326
RESQUAL	CCNTRL	CONTRL	2.10	.132	10.09	.000	0.27	.895	15.99	.000	0.09	.918	0.12	.889	1.58	.186
RESSE	CCNTRL	CONTRL	0.40	.681	7.88	.001	2.11	.085	0.33	.578	0.84	.557	0.63	.540	0.66	.625
RESSCON	CCNTRL	CONTRL	0.05	.948	10.15	.000	0.66	.626	4.72	.033	1.83	.169	0.90	.587	0.41	.806
RESEQV	CCNTRL	CONTRL	3.05	.055	7.83	.001	1.30	.277	17.20	.000	0.02	.977	0.34	.721	0.44	.782
RESCONO	CCNTRL	CONTRL	1.45	.244	15.13	.000	0.90	.531	15.57	.000	0.92	.591	1.14	.326	1.66	.164
RESSDIR	CCNTRL	CONTRL	1.54	.224	0.98	.618	1.01	.405	5.00	.028	0.38	.689	2.12	.123	2.04	.094
ENJOY	CCNTRL	CONTRL	3.02	.057	4.06	.020	1.40	.238	30.03	.000	1.26	.293	2.00	.140	0.50	.741
FRIENDS	CCNTRL	CONTRL	1.31	.278	2.58	.079	0.42	.794	2.35	.128	1.57	.218	1.52	.223	1.28	.282
DISRUPT	CCNTRL	CONTRL	4.73	.013	1.32	.271	0.09	.983	0.70	.586	0.64	.535	0.04	.960	1.08	.372
PERSEV	CCNTRL	CONTRL	1.39	.257	35.37	.000	1.32	.267	30.76	.000	0.70	.508	0.42	.665	3.60	.009
ACTIVE	CCNTRL	CONTRL	3.75	.030	7.83	.001	1.61	.177	28.99	.000	0.71	.500	0.10	.909	0.45	.777
RESACH	COMMON	CONTRL	0.04	.959	14.64	.000	0.80	.529	4.62	.035	0.31	.740	0.15	.861	1.83	.129
RESCREAT	COMMON	CONTRL	0.03	.976	3.95	.022	2.94	.024	11.98	.002	0.32	.732	0.13	.879	0.53	.718
RESINQ	COMMON	CONTRL	0.65	.534	16.12	.000	0.25	.907	1.25	.268	0.76	.524	1.37	.258	1.19	.321
RESQUAL	COMMON	CONTRL	0.00	.996	10.19	.000	0.48	.755	16.69	.000	1.22	.304	0.12	.891	0.14	.966
RESSE	COMMON	CONTRL	0.69	.512	7.35	.001	1.11	.359	0.35	.565	0.08	.926	0.59	.562	1.69	.159
RESSCON	COMMON	CONTRL	0.71	.502	10.13	.000	1.17	.327	4.42	.039	0.62	.549	0.87	.573	0.47	.757
RESEQV	COMMON	CONTRL	0.39	.684	7.70	.001	1.54	.197	17.34	.000	0.44	.650	0.27	.765	1.03	.399
RESCONO	COMMON	CONTRL	1.73	.187	15.24	.000	1.05	.387	15.06	.001	0.50	.615	0.99	.623	0.29	.883
RESSDIR	COMMON	CONTRL	2.07	.136	0.95	.608	0.67	.618	5.23	.025	1.15	.326	2.11	.125	0.83	.511
ENJOY	COMMON	CONTRL	0.75	.517	4.62	.012	3.63	.009	36.26	.000	5.88	.006	2.15	.120	0.76	.557
FRIENDS	COMMON	CONTRL	0.53	.595	2.54	.083	1.40	.238	2.64	.107	3.16	.050	1.58	.211	0.60	.665
DISRUPT	COMMON	CONTRL	1.05	.359	1.41	.249	1.34	.259	0.63	.563	2.11	.131	0.05	.952	0.75	.566
PERSEV	COMMON	CONTRL	0.83	.552	35.03	.000	1.03	.397	30.89	.000	0.88	.574	0.42	.665	1.15	.339
ACTIVE	COMMON	CONTRL	0.70	.505	7.49	.001	0.44	.782	30.01	.000	1.02	.369	0.09	.913	2.53	.045

Table 64 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. × Ch.		Sex		Cl. × Sex		Ch. × Sex		Cl. × Ch. × S	
			F	P	F	P	F	P	F	P	F	P	F	P	F	P
RESACH	NONIND	CONTRL	0.71	.500	14.36	.000	0.51	.734	4.66	.034	0.01	.993	0.12	.886	0.38	.823
RESCREAT	NONIND	CONTRL	0.29	.754	3.57	.031	0.50	.742	12.53	.001	0.78	.534	0.12	.889	0.30	.880
RESINQ	NONIND	CONTRL	2.42	.098	15.98	.000	0.33	.855	1.10	.300	0.82	.549	1.25	.292	0.97	.570
RESQUAL	NONIND	CONTRL	1.36	.266	10.74	.000	1.18	.323	16.05	.000	0.40	.675	0.13	.875	0.83	.514
RESSE	NONIND	CONTRL	0.38	.691	7.44	.001	1.39	.244	0.37	.554	0.31	.741	0.62	.543	1.37	.251
RESSCON	NONIND	CONTRL	0.17	.847	9.80	.000	0.15	.960	4.53	.036	1.13	.334	1.02	.367	3.90	.006
RESEQV	NONIND	CONTRL	1.10	.343	8.12	.001	2.99	.022	17.20	.000	0.03	.975	0.30	.747	0.21	.931
RESCONO	NONIND	CONTRL	0.61	.551	15.32	.000	1.35	.258	15.25	.001	0.80	.542	1.06	.351	2.27	.067
RESSDIR	NONIND	CONTRL	0.48	.630	1.03	.363	1.54	.195	5.11	.027	0.73	.508	2.11	.125	0.77	.549
ENJOY	NONIND	CONTRL	0.30	.746	3.97	.022	1.16	.334	31.02	.000	1.68	.196	2.04	.134	0.31	.873
FRIENDS	NONIND	CONTRL	1.29	.284	2.78	.065	2.32	.062	2.31	.131	0.48	.629	1.65	.196	2.04	.094
DISRUPT	NONIND	CONTRL	1.47	.239	1.32	.270	0.19	.940	0.62	.560	2.07	.135	0.05	.949	0.99	.583
PERSEV	NONIND	CONTRL	0.60	.559	34.27	.000	0.64	.641	30.61	.000	1.12	.336	0.42	.661	0.35	.841
ACTIVE	NONIND	CONTRL	2.34	.106	7.55	.001	0.59	.673	29.15	.000	1.03	.366	0.09	.916	0.96	.567
RESACH	PARTIC	CONTRL	0.56	.583	14.37	.000	0.61	.662	4.65	.034	0.06	.945	0.11	.896	0.04	.994
RESCREAT	PARTIC	CONTRL	3.01	.058	3.85	.024	3.02	.021	12.00	.001	0.42	.665	0.13	.878	5.61	.001
RESINQ	PARTIC	CONTRL	0.35	.713	16.00	.000	0.31	.872	1.25	.268	0.90	.583	1.28	.283	2.64	.038
RESQUAL	PARTIC	CONTRL	0.34	.720	10.89	.000	2.06	.092	16.63	.000	0.62	.545	0.12	.889	0.61	.657
RESSE	PARTIC	CONTRL	0.24	.794	7.19	.002	0.63	.649	0.32	.580	0.16	.851	0.59	.562	0.21	.931
RESSCON	PARTIC	CONTRL	0.07	.934	9.98	.000	1.07	.378	4.18	.044	0.06	.943	0.83	.559	0.16	.955
RESEQV	PARTIC	CONTRL	3.43	.040	7.35	.001	0.53	.716	17.62	.000	1.09	.345	0.37	.698	1.29	.280
RESCONO	PARTIC	CONTRL	0.05	.952	16.04	.000	2.80	.030	17.45	.000	3.10	.053	1.00	.626	0.29	.883
RESSDIR	PARTIC	CONTRL	0.24	.789	0.98	.620	1.50	.209	4.79	.032	0.40	.676	2.19	.115	1.12	.350
ENJOY	PARTIC	CONTRL	3.71	.031	3.96	.022	1.25	.296	28.89	.000	0.22	.805	2.07	.130	1.49	.210
FRIENDS	PARTIC	CONTRL	1.25	.295	2.74	.068	1.94	.109	2.27	.135	0.54	.591	1.51	.224	0.69	.601
DISRUPT	PARTIC	CONTRL	0.09	.909	1.32	.272	0.93	.550	0.60	.550	1.21	.309	0.04	.959	0.72	.582
PERSEV	PARTIC	CONTRL	0.58	.567	35.10	.000	0.90	.529	31.73	.000	1.33	.274	0.43	.659	0.64	.638
ACTIVE	PARTIC	CONTRL	1.36	.266	7.61	.001	0.83	.514	28.71	.000	0.34	.719	0.08	.920	0.27	.894
RESACH	EXPRES	CONTRL	0.80	.542	14.10	.000	0.24	.915	4.67	.034	0.01	.995	0.11	.895	0.06	.989
RESCREAT	EXPRES	CONTRL	0.90	.584	3.48	.034	0.49	.743	12.10	.001	0.26	.774	0.11	.897	2.78	.031
RESINQ	EXPRES	CONTRL	0.26	.772	16.39	.000	0.99	.580	1.13	.294	0.12	.887	1.29	.279	0.76	.555
RESQUAL	EXPRES	CONTRL	0.85	.564	10.41	.000	0.91	.536	16.43	.000	0.52	.605	0.10	.905	1.09	.365
RESSE	EXPRES	CONTRL	0.11	.895	7.16	.002	0.53	.718	0.32	.578	0.11	.893	0.57	.575	1.18	.326
RESSCON	EXPRES	CONTRL	0.48	.629	10.25	.000	1.88	.120	4.34	.040	0.53	.595	0.98	.617	1.96	.106
RESEQV	EXPRES	CONTRL	0.49	.621	7.29	.001	0.07	.988	17.16	.000	0.12	.887	0.36	.705	2.16	.079
RESCONO	EXPRES	CONTRL	0.59	.561	15.29	.000	1.61	.177	18.31	.000	4.30	.019	1.04	.359	0.53	.718
RESSDIR	EXPRES	CONTRL	1.28	.288	0.91	.593	0.46	.768	4.80	.032	0.29	.751	2.12	.123	1.12	.350
ENJOY	EXPRES	CONTRL	0.80	.539	3.99	.021	0.46	.768	28.65	.000	0.36	.704	2.06	.131	0.78	.544
FRIENDS	EXPRES	CONTRL	0.24	.788	2.56	.081	1.00	.412	2.29	.133	0.28	.762	1.52	.222	0.80	.533
DISRUPT	EXPRES	CONTRL	0.46	.640	1.36	.261	2.38	.056	0.65	.569	3.27	.046	0.06	.939	1.48	.213
PERSEV	EXPRES	CONTRL	1.62	.208	37.83	.000	2.64	.038	47.65	.000	13.03	.000	0.42	.661	0.89	.524
ACTIVE	EXPRES	CONTRL	2.24	.116	7.36	.001	0.31	.874	28.80	.000	0.31	.740	0.08	.924	0.85	.500

Table 64 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. x Ch.		Sex		Cl. x Sex		Ch. x Sex		Cl. x Ch. x S	
			F	P	F	P	F	P	F	P	F	P	F	P	F	P
RESACH	WARMTH	ACHMOT	0.94	.600	0.04	.966	0.32	.865	7.07	.010	0.89	.578	0.50	.615	0.14	.963
RESCREAT	WARMTH	ACHMOT	2.53	.089	0.22	.808	0.28	.892	23.47	.000	1.35	.268	4.16	.018	2.56	.043
RESINQ	WARMTH	ACHMOT	1.03	.365	1.49	.229	0.18	.947	1.48	.228	0.01	.995	1.97	.142	1.96	.106
RESQUAL	WARMTH	ACHMOT	0.79	.536	0.39	.684	1.68	.161	19.58	.000	3.83	.028	1.36	.261	1.18	.322
RESSE	WARMTH	ACHMOT	2.39	.101	3.01	.052	0.76	.554	0.18	.674	1.79	.176	1.44	.242	1.17	.331
RESSCON	WARMTH	ACHMOT	0.59	.562	7.22	.002	1.33	.263	9.51	.004	0.19	.826	0.64	.536	0.49	.748
RESEQV	WARMTH	ACHMOT	0.23	.797	0.70	.505	0.33	.858	17.34	.000	0.64	.536	0.96	.612	0.21	.930
RESCONO	WARMTH	ACHMOT	0.47	.631	8.10	.001	1.48	.213	27.69	.000	1.74	.185	1.88	.156	1.70	.155
RESSDIR	WARMTH	ACHMOT	0.98	.615	0.35	.711	1.60	.180	6.39	.014	1.01	.375	0.61	.550	1.50	.208
ENJOY	WARMTH	ACHMOT	1.97	.149	8.39	.001	0.82	.518	34.17	.000	1.79	.176	3.01	.052	2.57	.042
FRIENDS	WARMTH	ACHMOT	0.70	.506	4.29	.016	0.54	.710	3.15	.079	0.15	.865	0.63	.537	1.03	.394
DISRUPT	WARMTH	ACHMOT	2.06	.137	0.62	.543	2.25	.069	0.06	.803	4.18	.021	0.69	.506	2.51	.046
PERSEV	WARMTH	ACHMOT	1.18	.317	4.08	.020	1.01	.407	36.32	.000	0.76	.525	3.59	.030	0.97	.570
ACTIVE	WARMTH	ACHMOT	0.59	.562	4.88	.010	0.38	.822	37.22	.000	3.58	.035	2.41	.093	1.48	.214
RESACH	CCNTRL	ACHMOT	8.59	.001	0.03	.971	0.73	.574	6.84	.011	0.33	.727	0.49	.617	0.62	.655
RESCREAT	CCNTRL	ACHMOT	4.38	.018	0.23	.797	1.38	.246	22.02	.000	0.00	.997	3.97	.022	0.27	.898
RESINQ	CCNTRL	ACHMOT	2.69	.077	1.64	.198	0.82	.520	1.68	.198	1.88	.162	2.20	.115	2.79	.030
RESQUAL	CCNTRL	ACHMOT	3.32	.043	0.34	.721	1.03	.396	16.62	.000	0.16	.856	1.44	.242	2.08	.088
RESSE	CCNTRL	ACHMOT	0.77	.529	2.97	.055	0.63	.648	0.18	.681	1.03	.367	1.72	.183	2.94	.024
RESSCON	CCNTRL	ACHMOT	0.23	.798	6.82	.002	0.18	.945	10.50	.003	2.27	.113	0.71	.500	1.77	.139
RESEQV	CCNTRL	ACHMOT	1.88	.161	0.73	.512	0.85	.502	17.14	.000	0.10	.902	0.92	.596	0.93	.550
RESCONO	CCNTRL	ACHMOT	0.85	.561	8.02	.001	0.58	.681	26.91	.000	0.94	.600	1.78	.172	0.76	.559
RESSDIR	CCNTRL	ACHMOT	1.39	.257	0.31	.737	0.36	.838	5.94	.018	0.20	.824	0.53	.597	1.01	.405
ENJOY	CCNTRL	ACHMOT	1.96	.150	8.45	.001	0.97	.569	32.34	.000	0.75	.516	2.81	.063	0.28	.892
FRIENDS	CCNTRL	ACHMOT	1.72	.188	4.30	.016	0.52	.724	3.24	.075	0.10	.909	0.62	.547	0.77	.548
DISRUPT	CCNTRL	ACHMOT	7.00	.003	0.59	.562	0.24	.913	0.09	.767	0.39	.683	0.66	.522	0.81	.522
PERSEV	CCNTRL	ACHMOT	3.13	.052	3.86	.024	0.65	.631	35.57	.000	0.30	.743	3.72	.027	1.20	.314
ACTIVE	CCNTRL	ACHMOT	4.03	.024	4.75	.011	0.35	.842	32.22	.000	0.60	.557	2.36	.098	1.34	.260
RESACH	COMMON	ACHMOT	0.40	.680	0.04	.960	0.65	.629	6.81	.012	0.26	.774	0.48	.628	0.54	.706
RESCREAT	COMMON	ACHMOT	0.07	.934	0.23	.794	1.94	.109	22.40	.000	0.31	.737	4.16	.018	1.38	.246
RESINQ	COMMON	ACHMOT	0.81	.545	1.51	.225	0.70	.599	1.53	.220	0.26	.776	1.93	.148	0.68	.613
RESQUAL	COMMON	ACHMOT	0.02	.983	0.35	.713	0.90	.531	17.93	.000	1.87	.164	1.35	.263	0.54	.711
RESSE	COMMON	ACHMOT	0.43	.659	2.83	.062	0.70	.594	0.19	.666	0.70	.508	1.52	.222	0.85	.502
RESSCON	COMMON	ACHMOT	0.93	.598	7.00	.002	1.55	.192	9.78	.003	0.59	.563	0.66	.526	1.16	.335
RESEQV	COMMON	ACHMOT	0.11	.895	0.72	.506	0.45	.777	17.20	.000	0.26	.775	1.03	.364	3.15	.018
RESCONO	COMMON	ACHMOT	1.18	.317	7.73	.001	0.30	.880	27.06	.000	0.75	.518	1.68	.189	1.23	.302
RESSDIR	COMMON	ACHMOT	6.83	.003	0.35	.710	0.66	.626	6.58	.013	1.60	.210	0.56	.578	0.73	.578
ENJOY	COMMON	ACHMOT	0.25	.780	8.55	.001	0.85	.502	39.19	.000	5.28	.009	2.81	.064	0.05	.992
FRIENDS	COMMON	ACHMOT	0.63	.542	4.34	.015	2.14	.081	3.67	.058	2.24	.115	0.63	.539	2.01	.099
DISRUPT	COMMON	ACHMOT	0.74	.513	0.63	.537	1.21	.310	0.06	.803	2.65	.079	0.65	.530	1.06	.379
PERSEV	COMMON	ACHMOT	0.98	.615	3.93	.022	1.73	.148	39.03	.000	2.41	.099	3.50	.033	0.55	.699
ACTIVE	COMMON	ACHMOT	0.85	.563	5.10	.008	2.05	.093	32.41	.000	0.40	.678	2.32	.102	1.03	.397

Table 64 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. × Ch.		Sex		Cl. × Sex		Ch. × Sex		Cl. × Ch. × S	
			F	p	F	p	F	p	F	p	F	p	F	p	F	p
RESACH	NONIND	ACHMOT	0.59	.565	0.05	.952	1.58	.184	6.86	.011	0.15	.860	0.54	.591	0.56	.698
RESCREAT	NONIND	ACHMOT	0.54	.589	0.22	.808	0.81	.525	22.62	.000	0.55	.588	3.94	.022	1.07	.376
RESINQ	NONIND	ACHMOT	1.34	.272	1.51	.224	0.65	.635	1.44	.234	0.77	.527	1.97	.143	0.67	.616
RESQUAL	NONIND	ACHMOT	0.99	.621	0.33	.724	0.44	.779	17.12	.000	1.45	.245	1.52	.222	2.50	.047
RESSE	NONIND	ACHMOT	0.44	.655	3.12	.047	3.97	.005	0.20	.661	0.21	.811	1.40	.252	0.18	.947
RESSCON	NONIND	ACHMOT	0.03	.969	7.10	.002	1.37	.251	9.77	.003	0.57	.576	0.67	.521	0.36	.837
RESEQV	NONIND	ACHMOT	1.78	.178	0.72	.505	0.28	.888	17.34	.000	0.17	.845	0.92	.596	0.22	.924
RESCONO	NONIND	ACHMOT	0.62	.550	7.79	.001	0.10	.979	26.34	.000	0.12	.891	1.73	.181	0.63	.646
RESSDIR	NONIND	ACHMOT	0.73	.507	0.35	.714	1.10	.360	6.01	.017	0.07	.928	0.54	.588	0.08	.986
ENJOY	NONIND	ACHMOT	0.12	.890	8.13	.001	0.21	.931	32.18	.000	0.45	.649	2.90	.058	0.42	.793
FRIENDS	NONIND	ACHMOT	2.80	.069	4.23	.017	0.27	.896	3.36	.070	0.56	.578	0.65	.530	1.37	.250
DISRUPT	NONIND	ACHMOT	1.25	.295	0.65	.531	0.88	.519	0.08	.778	1.99	.145	0.64	.537	0.61	.657
PERSEV	NONIND	ACHMOT	0.09	.913	3.87	.024	0.71	.589	38.09	.000	2.74	.074	3.62	.030	1.12	.350
ACTIVE	NONIND	ACHMOT	2.50	.091	5.05	.008	0.98	.578	32.40	.000	0.95	.602	2.22	.112	0.61	.662
RESACH	PARTIC	ACHMOT	0.80	.539	0.03	.974	0.36	.835	6.97	.011	0.35	.711	0.53	.595	0.77	.552
RESCREAT	PARTIC	ACHMOT	3.70	.031	0.20	.818	0.34	.850	23.15	.000	1.80	.175	4.58	.012	4.77	.002
RESINQ	PARTIC	ACHMOT	0.28	.764	1.69	.188	1.53	.198	1.60	.210	0.70	.506	1.96	.145	1.24	.301
RESQUAL	PARTIC	ACHMOT	0.48	.629	0.37	.698	0.52	.721	17.20	.000	0.63	.540	1.38	.254	0.83	.511
RESSE	PARTIC	ACHMOT	0.36	.703	2.91	.058	1.13	.345	0.18	.678	1.24	.299	1.39	.252	0.35	.842
RESSCON	PARTIC	ACHMOT	0.19	.829	7.41	.001	2.11	.084	9.49	.004	0.22	.805	0.66	.525	2.16	.079
RESEQV	PARTIC	ACHMOT	1.01	.373	0.81	.549	1.39	.241	17.41	.000	0.74	.515	0.97	.615	0.35	.846
RESCONO	PARTIC	ACHMOT	0.76	.521	8.42	.001	1.36	.254	26.79	.000	0.41	.672	1.74	.178	2.22	.072
RESSDIR	PARTIC	ACHMOT	0.11	.898	0.29	.750	0.59	.674	5.97	.017	0.42	.664	0.51	.607	2.00	.100
ENJOY	PARTIC	ACHMOT	3.53	.036	8.12	.001	0.14	.966	32.26	.000	0.59	.563	2.96	.055	1.23	.303
FRIENDS	PARTIC	ACHMOT	1.64	.204	4.41	.015	0.84	.503	3.44	.066	1.20	.309	0.57	.570	0.61	.657
DISRUPT	PARTIC	ACHMOT	0.39	.685	0.60	.556	0.88	.519	0.07	.789	0.23	.796	0.61	.550	0.53	.720
PERSEV	PARTIC	ACHMOT	0.24	.789	3.93	.022	0.26	.902	35.90	.000	0.46	.640	3.49	.034	0.58	.679
ACTIVE	PARTIC	ACHMOT	2.02	.142	4.87	.010	0.69	.600	31.73	.000	0.08	.927	2.24	.110	0.37	.830
RESACH	EXPRES	ACHMOT	1.13	.333	0.06	.945	2.87	.027	7.02	.011	0.24	.789	0.49	.621	1.55	.193
RESCREAT	EXPRES	ACHMOT	1.16	.321	0.25	.783	0.76	.554	22.02	.000	0.17	.843	4.11	.019	1.16	.334
RESINQ	EXPRES	ACHMOT	0.69	.510	1.58	.210	1.08	.372	1.49	.226	0.37	.696	2.00	.139	0.94	.556
RESQUAL	EXPRES	ACHMOT	0.55	.587	0.36	.702	0.40	.807	16.73	.000	0.14	.866	1.36	.260	0.56	.697
RESSE	EXPRES	ACHMOT	0.54	.592	2.85	.061	0.51	.732	0.20	.660	0.05	.954	1.40	.249	0.96	.563
RESSCON	EXPRES	ACHMOT	0.02	.979	7.02	.002	1.53	.200	10.03	.003	1.08	.349	0.65	.529	1.65	.168
RESEQV	EXPRES	ACHMOT	0.24	.791	0.83	.558	2.49	.048	17.48	.000	0.47	.636	0.95	.609	1.09	.366
RESCONO	EXPRES	ACHMOT	1.84	.168	8.76	.001	2.64	.038	28.10	.000	1.40	.255	1.75	.177	1.14	.341
RESSDIR	EXPRES	ACHMOT	2.07	.135	0.33	.724	1.24	.298	6.15	.016	0.65	.533	0.54	.592	1.70	.155
ENJOY	EXPRES	ACHMOT	0.27	.771	8.32	.001	0.49	.743	32.08	.000	0.87	.571	2.84	.062	1.44	.226
FRIENDS	EXPRES	ACHMOT	0.18	.837	4.25	.017	0.65	.634	3.31	.072	0.40	.679	0.55	.582	0.62	.656
DISRUPT	EXPRES	ACHMOT	0.12	.887	0.63	.542	0.66	.623	0.07	.791	3.04	.056	0.59	.563	1.94	.109
PERSEV	EXPRES	ACHMOT	3.15	.051	3.97	.022	1.91	.115	45.04	.000	6.05	.005	3.70	.028	1.27	.286
ACTIVE	EXPRES	ACHMOT	3.81	.028	5.15	.008	1.59	.183	32.46	.000	0.68	.517	2.30	.104	1.53	.198

Table 64 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. × Ch.		Sex		Cl. × Sex		Ch. × Sex		Cl. × Ch. × S	
			F	P	F	P	F	P	F	P	F	P	F	P	F	P
RESACH	WARMTH	SES	1.65	.201	4.25	.017	0.12	.972	8.06	.007	0.82	.548	1.07	.347	2.95	.024
RESCREAT	WARMTH	SES	1.98	.148	3.01	.052	0.81	.521	10.06	.003	0.42	.668	0.03	.971	0.38	.821
RESINQ	WARMTH	SES	1.17	.319	4.64	.012	1.43	.229	1.04	.314	0.64	.535	0.36	.701	0.88	.518
RESQUAL	WARMTH	SES	0.51	.611	3.57	.031	0.51	.731	11.72	.002	2.51	.090	1.53	.220	0.52	.725
RESSE	WARMTH	SES	1.25	.296	6.50	.003	1.07	.377	0.68	.581	1.14	.330	1.52	.222	2.74	.032
RESSCON	WARMTH	SES	0.27	.769	7.50	.001	0.81	.523	6.37	.014	0.30	.743	0.18	.840	0.63	.642
RESEQV	WARMTH	SES	0.57	.577	0.94	.603	2.61	.040	18.20	.000	1.92	.156	1.53	.220	0.45	.774
RESCONO	WARMTH	SES	0.18	.835	3.12	.047	2.57	.042	18.22	.000	0.93	.595	0.89	.584	0.59	.676
RESSDIR	WARMTH	SES	0.39	.682	1.32	.272	1.48	.213	4.01	.048	0.65	.532	0.30	.743	2.42	.053
ENJOY	WARMTH	SES	1.52	.229	0.12	.883	1.48	.212	17.27	.000	1.17	.320	0.07	.933	3.00	.022
FRIENDS	WARMTH	SES	0.93	.595	2.43	.091	0.50	.736	0.55	.532	0.30	.750	0.11	.899	0.53	.714
DISRUPT	WARMTH	SES	0.78	.531	2.11	.124	0.33	.855	1.17	.285	1.42	.252	0.53	.598	1.42	.232
PERSEV	WARMTH	SES	0.20	.819	25.87	.000	1.15	.336	39.52	.000	0.96	.609	0.52	.602	2.04	.094
ACTIVE	WARMTH	SES	0.18	.837	17.08	.000	1.32	.267	28.40	.000	1.13	.331	1.21	.304	1.20	.317
RESACH	CCNTRL	SES	7.06	.002	4.41	.015	0.47	.758	8.54	.005	1.86	.165	1.08	.344	1.81	.133
RESCREAT	CCNTRL	SES	2.13	.128	3.27	.041	2.06	.092	10.16	.003	0.66	.526	0.02	.978	0.82	.517
RESINQ	CCNTRL	SES	4.89	.012	4.41	.014	0.49	.743	1.09	.302	1.12	.335	0.36	.705	1.54	.196
RESQUAL	CCNTRL	SES	2.84	.067	3.65	.029	0.72	.582	10.61	.002	0.28	.763	1.55	.217	0.33	.857
RESSE	CCNTRL	SES	0.67	.520	6.68	.002	0.97	.573	0.68	.581	0.76	.525	1.42	.247	1.11	.356
RESSCON	CCNTRL	SES	0.04	.966	7.61	.001	0.92	.545	7.15	.010	2.42	.098	0.17	.848	1.02	.403
RESEQV	CCNTRL	SES	5.06	.010	0.85	.565	1.41	.235	17.56	.000	0.43	.661	1.61	.203	1.57	.189
RESCONO	CCNTRL	SES	2.93	.061	2.96	.055	0.92	.541	17.76	.000	0.21	.811	0.81	.550	0.38	.821
RESSDIR	CCNTRL	SES	1.34	.270	1.33	.269	0.87	.513	4.02	.048	0.26	.775	0.31	.736	1.03	.398
ENJOY	CCNTRL	SES	2.05	.138	0.14	.867	0.74	.570	16.45	.000	0.57	.574	0.09	.917	0.13	.967
FRIENDS	CCNTRL	SES	0.68	.516	2.61	.077	1.18	.322	0.57	.540	0.42	.662	0.12	.888	0.42	.797
DISRUPT	CCNTRL	SES	4.98	.011	2.15	.120	0.40	.813	1.32	.256	1.09	.344	0.60	.557	1.41	.236
PERSEV	CCNTRL	SES	1.81	.172	27.15	.000	2.43	.052	37.70	.000	0.04	.963	0.46	.641	0.40	.813
ACTIVE	CCNTRL	SES	2.65	.079	17.01	.000	1.24	.298	27.07	.000	0.23	.797	1.19	.307	1.18	.324
REBACH	COMMON	SES	0.07	.934	4.39	.015	0.34	.853	7.78	.008	0.18	.837	1.06	.351	2.06	.091
RESCREAT	COMMON	SES	0.07	.930	3.17	.045	1.17	.328	10.10	.003	0.54	.589	0.02	.980	1.01	.408
RESINQ	COMMON	SES	0.91	.587	4.57	.013	1.00	.413	0.97	.668	0.02	.976	0.35	.708	2.08	.088
RESQUAL	COMMON	SES	0.05	.953	3.71	.027	0.93	.548	11.58	.002	2.28	.112	1.54	.217	0.57	.685
RESSE	COMMON	SES	0.73	.509	6.69	.002	1.06	.383	0.70	.589	0.99	.617	1.47	.234	1.76	.143
RESSCON	COMMON	SES	2.19	.121	7.79	.001	1.44	.225	7.29	.009	2.91	.063	0.14	.868	2.00	.100
RESEQV	COMMON	SES	0.12	.888	0.84	.563	0.34	.850	17.27	.000	0.16	.851	1.50	.228	0.25	.908
RESCONO	COMMON	SES	0.07	.932	2.83	.062	0.78	.545	18.31	.000	1.38	.260	0.83	.559	0.71	.592
RESSDIR	COMMON	SES	3.03	.056	1.44	.242	1.05	.388	4.31	.041	1.36	.266	0.30	.749	0.11	.976
ENJOY	COMMON	SES	0.16	.856	0.15	.865	0.99	.580	19.80	.000	4.59	.015	0.10	.908	2.17	.077
FRIENDS	COMMON	SES	0.12	.886	2.48	.087	1.10	.361	0.65	.571	1.50	.232	0.12	.885	1.89	.118
DISRUPT	COMMON	SES	0.78	.532	2.13	.122	1.49	.210	1.21	.276	1.21	.308	0.52	.603	0.37	.829
PERSEV	COMMON	SES	0.72	.504	24.71	.000	0.32	.864	43.19	.000	3.19	.049	0.51	.610	0.89	.522
ACTIVE	COMMON	SES	0.58	.569	17.14	.000	1.18	.325	27.35	.000	0.36	.708	1.11	.336	0.80	.531

Table 64 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	Class Var. F	Class Var. P	Child Var. F	Child Var. P	Cl. × Ch. F	Cl. × Ch. P	Sex F	Sex P	Cl. × Sex F	Cl. × Sex P	Ch. × Sex F	Ch. × Sex P	Cl. × Ch. × S F	Cl. × Ch. × S P
RESACH	NONIND	SES	0.89	.581	4.46	.014	0.96	.568	7.91	.007	0.79	.536	1.01	.371	0.87	.515
RESCREAT	NONIND	SES	0.12	.888	3.22	.043	0.76	.557	10.78	.002	1.10	.342	0.02	.986	0.71	.588
RESINQ	NONIND	SES	0.58	.568	4.39	.015	0.83	.510	0.93	.660	0.26	.778	0.32	.730	1.10	.359
RESQUAL	NONIND	SES	1.34	.270	3.71	.027	0.79	.538	10.74	.002	1.02	.370	1.63	.200	1.90	.116
RESSE	NONIND	SES	0.61	.554	7.15	.002	2.40	.054	0.79	.617	0.66	.525	1.42	.245	1.36	.253
RESSCON	NONIND	SES	0.51	.609	7.40	.001	0.14	.964	6.69	.012	1.27	.289	0.18	.839	0.81	.521
RESEQV	NONIND	SES	0.44	.651	0.89	.582	0.94	.557	17.29	.000	0.13	.877	1.54	.217	1.05	.387
RESCONO	NONIND	SES	0.19	.829	3.05	.050	1.54	.195	17.74	.000	0.17	.842	0.87	.574	0.70	.597
RESSDIR	NONIND	SES	0.32	.729	1.35	.264	0.58	.679	4.24	.043	1.10	.341	0.31	.738	2.12	.083
ENJOY	NONIND	SES	0.13	.874	0.16	.850	1.55	.193	17.00	.000	0.85	.562	0.10	.905	1.43	.229
FRIENDS	NONIND	SES	0.31	.738	2.49	.087	0.88	.519	0.64	.568	0.91	.589	0.12	.886	1.46	.219
DISRUPT	NONIND	SES	1.36	.265	2.24	.110	1.39	.242	1.21	.277	0.51	.607	0.54	.588	1.94	.110
PERSEV	NONIND	SES	1.01	.375	25.97	.000	1.61	.177	38.37	.000	0.79	.537	0.49	.619	0.38	.823
ACTIVE	NONIND	SES	0.76	.521	16.24	.000	0.67	.619	28.27	.000	1.79	.176	1.08	.345	0.39	.818
RESACH	PARTIC	SES	2.41	.099	4.36	.015	0.46	.770	7.77	.008	0.17	.848	1.19	.307	2.25	.068
RESCREAT	PARTIC	SES	3.31	.044	3.04	.051	0.48	.754	10.08	.003	0.40	.677	0.02	.983	1.50	.207
RESINQ	PARTIC	SES	0.39	.682	4.59	.012	1.12	.350	1.10	.300	1.52	.228	0.37	.694	0.85	.502
RESQUAL	PARTIC	SES	0.20	.820	4.02	.021	1.99	.102	11.35	.002	1.24	.298	1.58	.209	0.27	.898
RESSE	PARTIC	SES	0.14	.873	7.41	.001	3.53	.010	0.69	.583	0.43	.657	1.35	.263	0.29	.881
RESSCON	PARTIC	SES	0.14	.874	8.16	.001	2.78	.031	6.21	.016	0.03	.974	0.19	.831	0.51	.735
RESEQV	PARTIC	SES	2.03	.141	0.91	.591	1.17	.329	17.57	.000	0.80	.543	1.47	.233	0.42	.794
RESCONO	PARTIC	SES	0.94	.601	2.95	.056	0.51	.735	18.82	.000	1.12	.335	0.90	.587	0.92	.545
RESSDIR	PARTIC	SES	0.06	.946	1.35	.264	2.66	.037	3.89	.052	0.82	.551	0.33	.722	0.75	.565
ENJOY	PARTIC	SES	3.43	.040	0.16	.854	1.43	.229	16.58	.000	0.55	.584	0.07	.929	2.74	.033
FRIENDS	PARTIC	SES	1.06	.355	2.38	.096	1.59	.182	0.67	.576	2.41	.099	0.13	.876	0.33	.854
DISRUPT	PARTIC	SES	0.55	.587	2.11	.125	1.30	.275	1.16	.287	0.26	.779	0.52	.601	0.73	.574
PERSEV	PARTIC	SES	0.34	.715	25.73	.000	1.50	.208	41.26	.000	1.91	.158	0.44	.650	2.63	.039
ACTIVE	PARTIC	SES	2.87	.065	16.59	.000	0.69	.601	27.20	.000	0.25	.785	1.15	.320	0.63	.649
RESACH	EXPRES	SES	0.14	.867	4.68	.012	1.98	.103	8.02	.007	0.88	.577	1.08	.345	0.53	.719
RESCREAT	EXPRES	SES	0.73	.510	3.03	.052	0.17	.951	10.38	.003	0.51	.612	0.02	.981	0.80	.527
RESINQ	EXPRES	SES	0.50	.618	4.34	.015	0.73	.579	0.93	.658	1.10	.341	0.34	.720	0.74	.566
RESQUAL	EXPRES	SES	0.37	.695	3.72	.027	1.64	.170	11.13	.002	0.96	.607	1.66	.194	0.97	.573
RESSE	EXPRES	SES	0.06	.940	6.67	.002	1.16	.333	0.79	.618	1.10	.342	1.32	.272	0.50	.738
RESSCON	EXPRES	SES	0.05	.950	7.35	.001	0.17	.950	6.29	.015	0.10	.903	0.17	.841	0.71	.589
RESEQV	EXPRES	SES	0.67	.523	0.94	.605	1.96	.106	17.31	.000	0.20	.819	1.65	.195	1.52	.203
RESCONO	EXPRES	SES	1.27	.289	2.94	.056	1.07	.375	18.38	.000	0.66	.528	0.84	.562	1.34	.259
RESSDIR	EXPRES	SES	2.04	.139	1.51	.225	2.29	.065	3.92	.051	1.19	.312	0.43	.655	3.89	.006
ENJOY	EXPRES	SES	0.56	.578	0.13	.879	0.39	.814	16.85	.000	1.49	.235	0.08	.923	0.07	.988
FRIENDS	EXPRES	SES	0.25	.782	2.41	.094	0.60	.667	0.58	.543	0.00	.997	0.14	.868	0.89	.525
DISRUPT	EXPRES	SES	0.08	.919	2.21	.113	0.98	.574	1.26	.266	3.11	.053	0.56	.576	0.41	.801
PERSEV	EXPRES	SES	1.01	.373	26.23	.000	1.56	.192	46.61	.000	5.10	.010	0.44	.653	1.76	.142
ACTIVE	EXPRES	SES	3.39	.041	16.52	.000	0.86	.504	28.62	.000	1.59	.213	1.16	.319	0.60	.667

Table 65

Summary of Analyses of Variance Relating Child Factors, Classroom Cluster, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. × Ch.		Sex		Cl. × Sex		Ch. × Sex		Cl. × Ch. × S	
			F	P	F	P	F	P	F	P	F	P	F	P	F	P
RESACH	CL CLUST	CLAUT	2.93	.022	0.10	.908	0.94	.502	4.01	.049	0.34	.884	0.05	.948	2.38	.015
RESCREAT	CL CLUST	CLAUT	2.20	.070	0.99	.623	1.88	.058	10.97	.002	0.83	.539	0.44	.652	1.24	.277
RESINQ	CL CLUST	CLAUT	0.49	.783	0.77	.531	0.98	.529	0.78	.614	2.50	.044	0.34	.720	1.50	.153
RESQUAL	CL CLUST	CLAUT	1.11	.368	0.60	.556	0.40	.941	21.37	.000	1.00	.568	1.60	.206	1.52	.145
RESSE	CL CLUST	CLAUT	0.49	.780	0.76	.526	1.56	.131	0.11	.743	0.68	.640	0.47	.633	0.78	.649
RESSCON	CL CLUST	CLAUT	0.09	.992	1.21	.302	0.92	.519	6.68	.013	0.20	.960	0.31	.742	0.56	.840
RESEQV	CL CLUST	CLAUT	1.93	.107	0.21	.813	0.82	.609	18.24	.000	0.14	.980	0.76	.525	1.46	.170
RESCOND	CL CLUST	CLAUT	0.50	.776	0.77	.531	0.95	.506	6.60	.013	1.39	.247	3.80	.025	0.22	.993
RESSDIR	CL CLUST	CLAUT	0.28	.921	4.97	.009	2.25	.022	0.78	.613	0.84	.528	0.38	.692	1.39	.197
ENJOY	CL CLUST	CLAUT	0.66	.659	5.95	.004	0.97	.524	19.37	.000	0.72	.612	1.61	.204	0.61	.804
FRIENDS	CL CLUST	CLAUT	0.83	.540	0.56	.579	0.48	.897	0.66	.575	0.46	.807	0.49	.621	0.81	.623
DISRUPT	CL CLUST	CLAUT	1.89	.115	1.13	.327	0.80	.634	0.08	.779	0.91	.513	0.24	[illegible]	2.08	.035
PERSEV	CL CLUST	CLAUT	1.03	.415	6.72	.002	0.84	.591	27.83	.000	0.50	.774	1.64	.199	0.95	.504
ACTIVE	CL CLUST	CLAUT	3.35	.012	0.35	.708	1.16	.326	36.89	.000	0.95	.540	2.09	.128	1.12	.353
RESACH	CL CLUST	CNFORM	3.27	.013	0.15	.861	0.75	.680	9.71	.004	0.33	.893	0.26	.774	0.93	.512
RESCREAT	CL CLUST	CNFORM	1.36	.256	0.82	.553	1.31	.239	9.49	.004	0.68	.641	0.41	.673	0.83	.604
RESINQ	CL CLUST	CNFORM	0.82	.544	4.79	.011	1.28	.253	5.09	.027	2.02	.094	4.07	.020	0.89	.549
RESQUAL	CL CLUST	CNFORM	1.17	.339	8.60	.001	1.13	.349	18.08	.000	0.85	.520	1.12	.332	1.11	.362
RESSE	CL CLUST	CNFORM	0.36	.875	0.13	.877	0.46	.909	0.42	.528	1.17	.338	0.94	.603	1.78	.075
RESSCON	CL CLUST	CNFORM	0.14	.979	1.20	.306	1.46	.169	8.93	.005	0.21	.953	0.84	.560	1.50	.154
RESEQV	CL CLUST	CNFORM	0.57	.724	5.85	.004	1.76	.080	21.53	.000	0.14	.981	0.16	.850	1.26	.267
RESCOND	CL CLUST	CNFORM	0.83	.534	8.37	.001	0.27	.986	18.79	.000	1.67	.160	0.81	.549	0.20	.995
RESSDIR	CL CLUST	CNFORM	0.46	.803	5.61	.005	0.44	.921	6.12	.016	0.84	.531	0.33	.721	0.57	.835
ENJOY	CL CLUST	CNFORM	0.57	.721	5.70	.005	0.60	.807	27.13	.000	1.30	.282	0.12	.889	1.57	.130
FRIENDS	CL CLUST	CNFORM	0.65	.663	1.01	.369	0.78	.646	1.14	.292	0.50	.776	0.01	.993	1.23	.283
DISRUPT	CL CLUST	CNFORM	1.81	.130	1.20	.306	1.90	.055	0.00	.966	0.91	.518	0.46	.636	0.54	.858
PERSEV	CL CLUST	CNFORM	0.71	.623	2.08	.129	0.84	.589	46.10	.000	0.45	.811	0.69	.508	1.26	.265
ACTIVE	CL CLUST	CNFORM	3.26	.014	23.17	.000	0.26	.988	23.24	.000	1.08	.387	0.45	.646	0.38	.950
RESACH	CL CLUST	CONTRL	3.88	.006	14.12	.000	0.55	.852	3.47	.066	0.96	.549	0.14	.871	0.81	.620
RESCREAT	CL CLUST	CONTRL	1.99	.099	3.34	.039	0.17	.997	13.15	.001	1.07	.389	0.06	.943	1.93	.051
RESINQ	CL CLUST	CONTRL	0.42	.836	16.64	.000	1.10	.370	0.43	.524	2.40	.052	1.37	.258	1.01	.441
RESQUAL	CL CLUST	CONTRL	1.55	.194	10.05	.000	0.58	.824	14.34	.001	0.76	.585	0.06	.940	0.93	.515
RESSE	CL CLUST	CONTRL	0.32	.897	7.97	.001	1.55	.135	0.06	.796	1.78	.136	0.65	.532	0.80	.634
RESSCON	CL CLUST	CONTRL	0.21	.955	9.81	.000	1.11	.365	3.87	.053	0.31	.907	0.78	.533	0.38	.951
RESEQV	CL CLUST	CONTRL	1.42	.235	7.84	.001	0.64	.780	16.56	.000	0.41	.840	0.45	.645	0.65	.770
RESCOND	CL CLUST	CONTRL	0.18	.967	17.21	.000	2.20	.025	12.81	.001	1.05	.399	1.36	.260	0.86	.569
RESSDIR	CL CLUST	CONTRL	0.99	.565	0.95	.606	0.21	.994	5.20	.026	0.47	.797	1.90	.153	1.68	.098
ENJOY	CL CLUST	CONTRL	0.58	.718	3.35	.038	0.55	.853	28.68	.000	0.87	.509	1.90	.154	1.02	.437
FRIENDS	CL CLUST	CONTRL	0.91	.516	1.85	.161	1.13	.352	2.24	.138	1.15	.348	1.01	.370	0.52	.869
DISRUPT	CL CLUST	CONTRL	1.99	.099	1.41	.248	0.93	.513	1.07	.308	1.03	.411	0.06	.940	0.58	.826
PERSEV	CL CLUST	CONTRL	0.73	.609	31.52	.000	0.90	.539	26.06	.000	0.33	.892	0.19	.827	1.68	.098
ACTIVE	CL CLUST	CONTRL	2.66	.034	7.89	.001	1.04	.421	32.26	.000	1.02	.420	0.14	.855	1.53	.143

Table 65 (continued)

Summary of Analyses of Variance Relating Child Factors, Classroom Cluster, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	Class Var. F	Class Var. p	Child Var. F	Child Var. p	Cl. × Ch. F	Cl. × Ch. p	Sex F	Sex p	Cl. × Sex F	Cl. × Sex p	Ch. × Sex F	Ch. × Sex p	Cl. × Ch. × S F	Cl. × Ch. × S p
			F Values and Associated Probability Levels for All Effects													
RESACH	CL CLUST	ACHMOT	4.30	.003	0.01	.994	0.40	.944	5.31	.024	0.68	.647	0.31	.736	1.15	.337
RESCREAT	CL CLUST	ACHMOT	2.83	.026	0.20	.821	0.82	.614	26.03	.000	1.57	.188	3.96	.022	0.77	.655
RESINQ	CL CLUST	ACHMOT	0.56	.736	1.83	.165	1.10	.368	0.86	.639	1.96	.103	1.53	.220	0.71	.719
RESQUAL	CL CLUST	ACHMOT	1.25	.301	0.36	.703	1.03	.425	16.23	.000	1.19	.328	1.43	.244	1.26	.264
RESSE	CL CLUST	ACHMOT	0.31	.902	2.74	.068	0.83	.606	0.00	.974	1.45	.225	1.01	.369	1.06	.400
RESSCON	CL CLUST	ACHMOT	0.22	.949	7.31	.002	0.72	.701	9.57	.004	0.54	.745	0.56	.577	0.88	.553
RESEQV	CL CLUST	ACHMOT	0.67	.651	0.79	.540	1.94	.050	18.17	.000	1.05	.399	0.72	.506	1.06	.405
RESCONO	CL CLUST	ACHMOT	1.24	.307	9.25	.000	2.47	.012	23.21	.000	1.61	.177	2.14	.122	0.71	.715
RESSDIR	CL CLUST	ACHMOT	0.78	.574	0.28	.758	0.89	.543	4.88	.030	0.39	.850	0.88	.580	0.99	.537
ENJOY	CL CLUST	ACHMOT	0.53	.753	7.03	.002	0.18	.996	30.60	.000	0.64	.676	2.89	.059	0.89	.546
FRIENDS	CL CLUST	ACHMOT	1.10	.372	4.13	.019	1.28	.252	2.72	.103	0.27	.925	0.73	.511	1.12	.358
DISRUPT	CL CLUST	ACHMOT	2.41	.051	0.46	.641	1.04	.415	0.12	.734	0.81	.551	1.14	.323	1.88	.059
PERSEV	CL CLUST	ACHMOT	1.23	.312	4.48	.014	0.93	.511	30.75	.000	0.45	.815	4.89	.010	3.21	.002
ACTIVE	CL CLUST	ACHMOT	3.52	.009	4.83	.010	0.87	.561	34.85	.000	0.87	.510	2.15	.120	0.72	.708
RESACH	CL CLUST	SES	3.17	.016	6.05	.004	1.44	.174	7.84	.008	1.35	.262	0.84	.561	1.05	.413
RESCREAT	CL CLUST	SES	1.44	.229	4.37	.015	1.35	.216	10.71	.002	0.81	.549	0.08	.926	0.55	.851
RESINQ	CL CLUST	SES	1.04	.405	4.05	.020	0.28	.984	0.71	.591	1.21	.318	0.66	.524	2.19	.025
RESQUAL	CL CLUST	SES	0.97	.554	3.65	.029	0.26	.988	10.32	.003	0.59	.713	1.11	.334	1.16	.331
RESSE	CL CLUST	SES	0.30	.910	6.27	.003	2.35	.017	0.26	.620	0.94	.532	1.58	.210	1.50	.152
RESSCON	CL CLUST	SES	0.13	.982	9.04	.000	1.85	.063	6.00	.017	0.82	.544	0.22	.801	1.07	.396
RESEQV	CL CLUST	SES	1.14	.353	0.96	.613	1.94	.050	16.57	.000	0.43	.824	1.65	.196	0.98	.535
RESCONO	CL CLUST	SES	0.69	.633	2.35	.099	0.63	.781	16.05	.000	1.15	.351	0.77	.532	1.16	.327
RESSDIR	CL CLUST	SES	0.68	.645	1.57	.213	0.73	.698	3.70	.058	0.39	.855	0.25	.783	0.85	.586
ENJOY	CL CLUST	SES	0.49	.783	0.22	.805	1.53	.141	16.28	.000	1.05	.399	0.07	.932	1.07	.393
FRIENDS	CL CLUST	SES	0.72	.611	3.22	.043	0.76	.666	0.63	.562	1.18	.335	0.03	.968	0.96	.512
DISRUPT	CL CLUST	SES	1.49	.213	2.43	.092	1.28	.252	1.31	.258	0.90	.507	0.44	.651	0.74	.683
PERSEV	CL CLUST	SES	0.37	.866	26.85	.000	1.49	.157	34.01	.000	0.72	.611	0.42	.665	0.84	.594
ACTIVE	CL CLUST	SES	1.78	.137	15.53	.000	0.45	.920	33.85	.000	1.68	.160	1.19	.309	1.42	.184

Table 66

Summary of Analyses of Variance Relating Child Cluster, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	Class Var. F	Class Var. P	Child Var. F	Child Var. P	Cl. × Ch. F	Cl. × Ch. P	Sex F	Sex P	Cl. × Sex F	Cl. × Sex P	Ch. × Sex F	Ch. × Sex P	Cl. × Ch. × S F	Cl. × Ch. × S P
			F Values and Associated Probability Levels for All Effects													
RESACH	WARMTH	CH CLUST	0.60	.559	0.42	.667	0.72	.585	4.03	.048	0.45	.648	0.59	.561	0.45	.777
RESCREAT	WARMTH	CH CLUST	2.91	.063	5.30	.007	0.27	.894	5.05	.028	0.13	.880	0.01	.994	2.15	.079
RESINQ	WARMTH	CH CLUST	0.33	.728	13.00	.000	0.12	.970	0.08	.772	1.03	.368	1.37	.259	0.48	.752
RESQUAL	WARMTH	CH CLUST	0.04	.961	15.28	.000	1.45	.222	8.83	.005	3.05	.055	2.19	.115	1.89	.118
RESSE	WARMTH	CH CLUST	0.60	.556	3.60	.030	0.22	.925	0.43	.521	0.69	.511	0.77	.531	1.29	.279
RESSCON	WARMTH	CH CLUST	0.11	.894	2.84	.062	0.56	.699	3.85	.053	0.51	.612	0.68	.516	0.74	.566
RESEQV	WARMTH	CH CLUST	2.25	.115	11.01	.000	1.39	.244	14.81	.001	1.60	.212	0.02	.979	0.32	.864
RESCONO	WARMTH	CH CLUST	0.08	.918	3.00	.053	0.97	.571	15.03	.001	1.34	.271	0.34	.718	0.17	.950
RESSDIR	WARMTH	CH CLUST	1.12	.334	3.88	.023	0.82	.518	3.13	.080	1.64	.203	0.18	.840	1.42	.232
ENJOY	WARMTH	CH CLUST	0.69	.511	10.49	.000	0.75	.565	27.66	.000	0.76	.525	0.05	.953	0.83	.510
FRIENDS	WARMTH	CH CLUST	1.27	.289	1.32	.272	1.11	.355	0.09	.758	0.27	.766	6.43	.003	0.88	.518
DISRUPT	WARMTH	CH CLUST	2.32	.108	1.81	.167	1.48	.213	1.57	.214	2.96	.060	2.49	.087	0.69	.607
PERSEV	WARMTH	CH CLUST	0.63	.540	41.51	.000	0.44	.785	25.25	.000	0.19	.829	0.70	.501	0.47	.761
ACTIVE	WARMTH	CH CLUST	0.11	.894	27.24	.000	0.31	.870	25.31	.000	0.74	.514	1.13	.329	0.55	.701
RESACH	CCNTRL	CH CLUST	5.62	.007	0.43	.655	0.56	.698	4.01	.048	0.59	.565	0.62	.545	0.36	.839
RESCREAT	CCNTRL	CH CLUST	4.49	.016	6.81	.002	6.14	.000	5.06	.028	0.78	.532	0.00	.997	0.81	.527
RESINQ	CCNTRL	CH CLUST	2.20	.121	13.35	.000	0.55	.704	0.09	.765	1.80	.175	1.43	.244	0.39	.814
RESQUAL	CCNTRL	CH CLUST	3.24	.047	14.67	.000	0.28	.892	7.66	.008	0.16	.851	2.18	.117	0.55	.704
RESSE	CCNTRL	CH CLUST	1.80	.175	3.55	.032	0.33	.856	0.43	.522	2.09	.133	0.74	.518	0.29	.884
RESSCON	CCNTRL	CH CLUST	0.01	.992	2.82	.063	0.89	.523	4.36	.040	2.70	.076	0.75	.520	1.91	.114
RESEQV	CCNTRL	CH CLUST	1.25	.297	10.50	.000	0.59	.677	14.26	.001	0.03	.968	0.03	.974	0.63	.648
RESCONO	CCNTRL	CH CLUST	0.45	.647	3.14	.046	1.04	.390	14.52	.001	0.58	.567	0.32	.729	0.59	.671
RESSDIR	CCNTRL	CH CLUST	1.70	.193	3.82	.025	0.15	.959	2.88	.092	0.44	.654	0.18	.841	2.86	.027
ENJOY	CCNTRL	CH CLUST	1.80	.174	10.22	.000	0.08	.985	26.95	.000	0.31	.742	0.04	.963	0.57	.690
FRIENDS	CCNTRL	CH CLUST	0.65	.531	1.22	.299	1.07	.375	0.10	.750	0.01	.990	6.53	.003	1.27	.285
DISRUPT	CCNTRL	CH CLUST	4.24	.020	1.93	.149	1.14	.340	1.68	.198	1.46	.241	2.48	.087	0.24	.912
PERSEV	CCNTRL	CH CLUST	0.32	.734	41.29	.000	0.38	.825	26.27	.000	0.98	.614	0.73	.511	0.98	.575
ACTIVE	CCNTRL	CH CLUST	3.48	.038	31.07	.000	3.38	.013	26.64	.000	2.60	.083	1.08	.343	0.15	.958
RESACH	COMMON	CH CLUST	0.23	.798	0.44	.648	0.64	.639	3.88	.052	0.59	.561	0.59	.559	0.48	.754
RESCREAT	COMMON	CH CLUST	0.78	.530	5.82	.004	1.90	.116	5.04	.028	0.02	.978	0.00	.996	0.72	.581
RESINQ	COMMON	CH CLUST	0.21	.812	14.36	.000	2.04	.094	0.10	.756	0.01	.993	1.46	.237	1.29	.278
RESQUAL	COMMON	CH CLUST	0.23	.795	15.30	.000	1.24	.300	8.09	.007	1.37	.264	2.24	.110	1.04	.391
RESSE	COMMON	CH CLUST	0.27	.765	3.77	.026	1.03	.396	0.54	.528	1.38	.260	0.77	.531	0.23	.921
RESSCON	COMMON	CH CLUST	0.68	.515	3.05	.050	1.28	.283	3.68	.058	0.14	.867	0.75	.520	0.86	.507
RESEQV	COMMON	CH CLUST	0.00	.997	10.53	.000	0.46	.766	14.69	.001	1.35	.267	0.02	.982	0.90	.531
RESCONO	COMMON	CH CLUST	0.84	.561	2.99	.054	0.25	.909	14.69	.001	0.64	.537	0.34	.716	0.17	.951
RESSDIR	COMMON	CH CLUST	1.45	.243	3.82	.025	0.14	.962	2.94	.089	0.35	.710	0.17	.842	0.64	.638
ENJOY	COMMON	CH CLUST	0.24	.791	10.54	.000	1.01	.405	31.08	.000	3.46	.039	0.04	.960	1.04	.394
FRIENDS	COMMON	CH CLUST	0.01	.993	1.24	.294	0.91	.537	0.11	.745	0.44	.652	6.37	.003	0.25	.907
DISRUPT	COMMON	CH CLUST	0.88	.575	1.74	.180	0.09	.981	1.76	.188	4.68	.014	2.54	.082	1.27	.285
PERSEV	COMMON	CH CLUST	2.43	.097	44.63	.000	2.07	.090	26.34	.000	1.01	.374	0.71	.501	0.45	.772
ACTIVE	COMMON	CH CLUST	0.29	.750	27.12	.000	0.22	.922	25.82	.000	1.14	.328	1.22	.301	2.96	.023

Table 66 (continued)

Summary of Analyses of Variance Relating Child Cluster, Classroom Factors, and Sex to Various Outcome Measures

Outcome Variable	Class Variable	Child Variable	Class Var. F	Class Var. p	Child Var. F	Child Var. p	Cl. × Ch. F	Cl. × Ch. p	Sex F	Sex p	Cl. × Sex F	Cl. × Sex p	Ch. × Sex F	Ch. × Sex p	Cl. × Ch. × S F	Cl. × Ch. × S p
RESACH	NONIND	CH CLUST	0.34	.719	0.44	.652	0.27	.898	3.88	.052	0.21	.814	0.66	.525	1.17	.331
RESCREAT	NONIND	CH CLUST	0.07	.935	5.32	.007	0.15	.959	5.25	.025	0.74	.512	0.01	.994	0.64	.639
RESINQ	NONIND	CH CLUST	1.69	.194	13.42	.000	0.59	.676	0.11	.743	0.22	.805	1.39	.254	0.78	.541
RESQUAL	NONIND	CH CLUST	0.96	.607	15.07	.000	0.59	.676	7.54	.008	0.39	.688	2.53	.083	2.47	.049
RESSE	NONIND	CH CLUST	0.15	.859	3.73	.027	1.61	.177	0.45	.511	0.26	.776	0.72	.507	0.71	.590
RESSCON	NONIND	CH CLUST	0.15	.858	2.85	.061	0.25	.909	3.72	.057	0.11	.892	0.79	.540	2.19	.075
RESEQV	NONIND	CH CLUST	0.69	.509	10.65	.000	1.26	.290	14.43	.001	0.75	.519	0.02	.983	2.27	.067
RESCONO	NONIND	CH CLUST	0.06	.943	3.01	.053	0.12	.973	14.97	.001	1.48	.236	0.39	.686	1.52	.203
RESSDIR	NONIND	CH CLUST	0.17	.847	4.15	.018	1.72	.151	2.85	.094	0.03	.970	0.22	.802	2.54	.044
ENJOY	NONIND	CH CLUST	0.14	.870	10.59	.000	1.02	.404	30.28	.000	2.73	.074	0.04	.965	0.24	.916
FRIENDS	NONIND	CH CLUST	2.01	.144	1.22	.299	0.49	.744	0.09	.762	0.27	.765	6.50	.003	0.64	.635
DISRUPT	NONIND	CH CLUST	1.13	.331	1.96	.144	1.82	.130	1.57	.214	1.46	.242	2.50	.085	0.73	.575
PERSEV	NONIND	CH CLUST	0.01	.989	41.45	.000	0.75	.563	25.10	.000	0.23	.796	0.73	.512	1.22	.306
ACTIVE	NONIND	CH CLUST	1.63	.205	27.34	.000	0.24	.912	24.44	.000	0.40	.681	1.16	.317	1.85	.124
RESACH	PARTIC	CH CLUST	0.86	.568	0.49	.618	1.33	.262	3.87	.052	0.22	.809	0.62	.547	0.56	.693
RESCREAT	PARTIC	CH CLUST	2.54	.088	5.36	.006	0.16	.957	5.18	.026	1.91	.158	0.01	.993	1.39	.243
RESINQ	PARTIC	CH CLUST	0.05	.948	13.82	.000	1.32	.267	0.08	.771	0.66	.525	1.44	.241	2.35	.059
RESQUAL	PARTIC	CH CLUST	0.14	.869	16.17	.000	2.36	.058	8.10	.007	1.08	.350	2.19	.115	0.51	.734
RESSE	PARTIC	CH CLUST	0.26	.772	3.71	.027	0.52	.722	0.44	.518	0.31	.738	0.73	.513	0.54	.713
RESSCON	PARTIC	CH CLUST	0.25	.783	2.99	.054	0.88	.519	3.66	.059	0.08	.925	0.70	.506	1.15	.339
RESEQV	PARTIC	CH CLUST	0.70	.508	10.79	.000	0.69	.600	14.24	.001	0.09	.914	0.03	.975	2.60	.041
RESCONO	PARTIC	CH CLUST	0.24	.791	3.16	.046	0.87	.514	14.62	.001	0.49	.618	0.33	.723	1.32	.266
RESSDIR	PARTIC	CH CLUST	0.27	.770	3.80	.025	0.14	.966	2.85	.094	1.12	.335	0.17	.846	1.29	.278
ENJOY	PARTIC	CH CLUST	1.66	.199	10.27	.000	0.12	.971	27.26	.000	0.47	.636	0.03	.967	1.25	.295
FRIENDS	PARTIC	CH CLUST	0.62	.545	1.25	.290	0.56	.698	0.13	.718	1.37	.264	6.20	.003	0.24	.913
DISRUPT	PARTIC	CH CLUST	0.23	.798	1.74	.179	0.32	.866	1.44	.235	0.45	.644	2.77	.066	1.93	.110
PERSEV	PARTIC	CH CLUST	0.04	.958	42.53	.000	0.92	.545	25.90	.000	0.55	.589	0.72	.508	1.68	.160
ACTIVE	PARTIC	CH CLUST	1.76	.131	27.20	.000	0.36	.839	25.47	.000	0.97	.611	1.10	.338	0.22	.925
RESACH	EXPRES	CH CLUST	0.47	.536	0.41	.674	1.22	.309	4.25	.042	1.07	.353	0.55	.583	1.05	.386
RESCREAT	EXPRES	CH CLUST	0.86	.566	5.84	.004	3.38	.012	5.08	.027	0.28	.762	0.01	.992	1.55	.194
RESINQ	EXPRES	CH CLUST	0.25	.784	13.32	.000	0.90	.531	0.13	.720	1.84	.168	1.49	.230	0.97	.569
RESQUAL	EXPRES	CH CLUST	0.35	.715	14.95	.000	1.25	.295	8.10	.007	1.09	.347	2.20	.114	0.41	.805
RESSE	EXPRES	CH CLUST	0.92	.590	3.81	.025	2.76	.032	0.47	.504	0.43	.660	0.70	.502	1.05	.388
RESSCON	EXPRES	CH CLUST	[illegible]	.619	2.82	.063	1.27	.285	3.72	.057	0.06	.939	0.65	.528	0.78	.540
RESEQV	EXPRES	CH CLUST	0.24	.787	11.11	.000	2.15	.079	14.23	.001	0.20	.821	0.01	.986	1.04	.393
RESCONO	EXPRES	CH CLUST	0.32	.733	2.99	.053	0.63	.645	15.48	.001	1.68	.195	0.32	.730	1.40	.238
RESSDIR	EXPRES	CH CLUST	1.68	.196	3.82	.025	0.09	.981	2.82	.096	0.75	.517	0.18	.834	1.68	.160
ENJOY	EXPRES	CH CLUST	0.14	.867	10.42	.000	0.41	.804	27.87	.000	1.23	.301	0.04	.963	1.52	.201
FRIENDS	EXPRES	CH CLUST	0.25	.785	1.18	.313	0.47	.759	0.11	.738	0.45	.643	6.28	.003	0.47	.764
DISRUPT	EXPRES	CH CLUST	0.35	.709	1.89	.155	3.00	.022	1.70	.196	4.68	.014	2.44	.090	0.36	.839
PERSEV	EXPRES	CH CLUST	0.92	.591	43.88	.000	1.66	.165	32.77	.000	6.33	.004	0.65	.527	1.80	.134
ACTIVE	EXPRES	CH CLUST	2.90	.063	27.48	.000	0.65	.630	25.89	.000	1.86	.166	1.10	.336	0.31	.870

Table 67

Summary of Analyses of Variance Relating Prior Status, Classroom Cluster, and Sex to Parallel Outcome Measures

Outcome Variable	Class Variable	Prior Status	F Values and Associated Probability Levels for All Effects													
			Class Var.		Child Var.		Cl. × Ch.		Sex		Cl. × Sex		Ch. × Sex		Cl. × Ch. × S	
			F	p	F	p	F	p	F	p	F	p	F	p	F	p
READING	CL CLUST	PRE READ	1.23	.310	249.23	.000	2.11	.031	0.06	.801	0.89	.504	3.17	.046	0.55	.848
MATH CONC	CL CLUST	PRE MCON	0.81	.552	140.20	.000	0.62	.793	8.44	.006	1.71	.151	3.05	.051	0.99	.544
MATH PROB	CL CLUST	PRE MPRO	1.03	.415	131.15	.000	0.78	.645	14.94	.001	3.43	.011	1.67	.191	0.96	.516
ACHIEVE	CL CLUST	PRE ACH	1.22	.317	323.91	.000	0.92	.523	9.37	.004	1.19	.328	2.43	.092	1.23	.281
CREATIVITY	CL CLUST	PRE CREA	0.75	.595	48.22	.000	1.24	.278	20.41	.000	0.24	.941	0.06	.938	0.75	.673
INQUIRY SK	CL CLUST	PRE INQ	0.32	.897	38.39	.000	1.07	.392	5.14	.027	1.23	.313	3.16	.046	0.98	.530
WRITING Q	CL CLUST	PRE WRIT	0.16	.974	49.96	.000	1.60	.121	12.93	.001	0.96	.549	0.46	.640	0.38	.951

Table 68

Summary of Analyses of Variance Relating Prior Status, Classroom Factors, and Sex to Parallel Outcome Measures

Outcome Variable	Class Variable	Prior Status	Class Var. F	Class Var. p	Child Var. F	Child Var. p	Cl. x Ch. F	Cl. x Ch. p	Sex F	Sex p	Cl. x Sex F	Cl. x Sex p	Ch. x Sex F	Ch. x Sex p	Cl. x Ch. x S F	Cl. x Ch. x S p
			F Values and Associated Probability Levels for All Effects													
READING	WARMTH	PRE READ	1.31	.278	237.48	.000	0.28	.888	0.24	.633	3.05	.055	3.61	.030	0.25	.910
READING	CCNTRL	PRE READ	3.80	.029	264.09	.000	2.78	.031	0.18	.679	0.45	.648	3.79	.025	2.26	.068
READING	COMMON	PRE READ	0.23	.795	238.91	.000	0.31	.869	0.21	.653	2.27	.113	3.63	.029	0.58	.681
READING	NONIND	PRE READ	1.67	.198	253.00	.000	1.72	.151	0.18	.675	0.34	.721	4.20	.018	4.80	.002
READING	PARTIC	PRE READ	1.11	.339	239.61	.000	0.43	.788	0.21	.655	0.16	.854	3.56	.032	0.23	.919
READING	EXPRES	PRE READ	0.27	.768	239.33	.000	0.47	.763	0.21	.653	0.88	.574	3.54	.032	0.16	.956
MATH CONC	WARMTH	PRE MCON	1.54	.223	155.26	.000	1.91	.115	10.43	.003	0.20	.819	2.50	.086	0.72	.582
MATH CONC	CCNTRL	PRE MCON	4.70	.014	154.26	.000	1.44	.227	13.50	.001	6.04	.005	2.59	.078	2.40	.055
MATH CONC	COMMON	PRE MCON	0.13	.879	149.42	.000	0.64	.636	10.78	.002	0.74	.514	2.60	.078	0.78	.544
MATH CONC	NONIND	PRE MCON	0.59	.562	150.44	.000	0.81	.524	10.43	.003	0.25	.785	2.70	.071	2.74	.032
MATH CONC	PARTIC	PRE MCON	0.74	.515	152.59	.000	1.25	.296	10.28	.003	0.05	.947	2.54	.083	1.17	.331
MATH CONC	EXPRES	PRE MCON	0.02	.985	147.39	.000	0.42	.794	10.26	.003	0.29	.753	2.51	.084	0.80	.530
MATH PROB	WARMTH	PRE MPRO	2.99	.058	132.60	.000	0.22	.924	12.99	.001	1.55	.221	1.95	.146	0.43	.789
MATH PROB	CCNTRL	PRE MPRO	7.15	.002	134.38	.000	0.60	.664	13.24	.001	1.57	.216	1.96	.144	0.65	.634
MATH PROB	COMMON	PRE MPRO	0.01	.988	133.53	.000	0.37	.828	12.29	.001	0.51	.607	1.99	.140	0.80	.529
MATH PROB	NONIND	PRE MPRO	0.05	.956	133.69	.000	0.37	.833	12.16	.001	0.26	.774	2.00	.139	0.77	.551
MATH PROB	PARTIC	PRE MPRO	0.65	.529	134.01	.000	0.53	.718	13.50	.001	1.95	.151	1.99	.140	0.54	.712
MATH PROB	EXPRES	PRE MPRO	1.48	.236	133.23	.000	0.47	.758	12.51	.001	0.67	.521	2.00	.139	0.36	.836
ACHIEVE	WARMTH	PRE ACH	2.40	.100	345.66	.000	0.53	.717	10.60	.002	1.42	.250	2.44	.090	0.69	.600
ACHIEVE	CCNTRL	PRE ACH	5.99	.005	358.63	.000	1.32	.266	10.71	.002	1.61	.208	2.41	.093	0.95	.562
ACHIEVE	COMMON	PRE ACH	0.38	.692	365.45	.000	1.77	.140	10.37	.003	1.21	.306	2.47	.088	0.84	.505
ACHIEVE	NONIND	PRE ACH	0.34	.715	344.17	.000	0.39	.814	9.89	.003	0.83	.554	2.55	.082	2.09	.088
ACHIEVE	PARTIC	PRE ACH	2.20	.120	350.72	.000	0.79	.536	9.73	.003	0.13	.881	2.36	.098	0.40	.809
ACHIEVE	EXPRES	PRE ACH	0.27	.771	347.56	.000	0.76	.558	9.86	.003	0.22	.802	2.42	.092	0.44	.781
CREATIVITY	WARMTH	PRE CREA	3.10	.053	46.12	.000	0.73	.577	21.46	.000	0.05	.950	0.03	.972	0.65	.630
CREATIVITY	CCNTRL	PRE CREA	3.22	.047	45.19	.000	0.26	.904	21.41	.000	0.01	.993	0.04	.957	0.51	.734
CREATIVITY	COMMON	PRE CREA	0.05	.948	48.01	.000	1.49	.212	21.60	.000	0.15	.858	0.02	.976	1.06	.381
CREATIVITY	NONIND	PRE CREA	0.59	.565	46.09	.000	0.60	.670	21.61	.000	0.25	.785	0.03	.970	0.93	.547
CREATIVITY	PARTIC	PRE CREA	2.47	.094	45.36	.000	0.46	.768	22.25	.000	1.51	.230	0.03	.973	0.63	.647
CREATIVITY	EXPRES	PRE CREA	1.35	.269	46.95	.000	1.30	.277	22.49	.000	1.00	.621	0.03	.971	0.56	.696
INQUIRY SK	WARMTH	PRE INQ	1.25	.295	37.76	.000	0.36	.839	4.47	.037	0.62	.548	3.79	.025	0.80	.533
INQUIRY SK	CCNTRL	PRE INQ	3.58	.035	41.44	.000	2.18	.076	4.43	.038	0.75	.516	4.09	.019	1.69	.159
INQUIRY SK	COMMON	PRE INQ	0.68	.514	37.50	.000	0.15	.961	4.42	.039	0.38	.694	3.81	.025	0.22	.924
INQUIRY SK	NONIND	PRE INQ	1.36	.261	38.18	.000	0.36	.836	4.30	.041	0.41	.672	3.90	.023	0.59	.671
INQUIRY SK	PARTIC	PRE INQ	0.30	.747	40.64	.000	1.75	.144	4.54	.036	0.98	.613	3.90	.023	1.22	.306
INQUIRY SK	EXPRES	PRE INQ	0.71	.500	37.64	.000	0.22	.923	4.45	.038	2.44	.096	3.74	.027	0.26	.905
WRITING Q	WARMTH	PRE WRIT	2.67	.078	49.78	.000	0.96	.563	18.45	.000	4.18	.021	0.43	.657	0.51	.730
WRITING Q	CCNTRL	PRE WRIT	3.40	.041	51.01	.000	1.49	.211	16.39	.000	1.61	.210	0.44	.653	1.25	.293
WRITING Q	COMMON	PRE WRIT	0.10	.906	49.55	.000	0.75	.564	16.83	.000	2.38	.101	0.38	.691	0.13	.968
WRITING Q	NONIND	PRE WRIT	1.16	.322	48.85	.000	0.34	.848	15.26	.001	0.30	.745	0.43	.658	0.71	.591
WRITING Q	PARTIC	PRE WRIT	1.20	.310	50.64	.000	1.03	.394	16.76	.000	1.87	.164	0.45	.645	1.37	.251
WRITING Q	EXPRES	PRE WRIT	1.12	.335	48.30	.000	0.15	.962	15.37	.001	0.13	.876	0.37	.695	2.11	.085

Table 69

Cutting Points for Trichotomized Variables Used in Analyses of Variance (Other than Factors)[a]

Variable	Lower Cutting Point	Upper Cutting Point
SES	3.5	4.5
Pre-Reading (Percentile)	48.0	77.5
Pre-Arithmetic Concepts (Percentile)	54.0	81.5
Pre-Arithmetic Problems (Percentile)	47.5	82.0
Pre- Writing Quality	4.5	5.5

[a] Although several sets of factor scores were also trichotomized and used in analyses of variance (including classroom factors, person factors, pre-creativity and pre-inquiry), the cutting points are not presented here because these factor scores were standardized relative to the range of values obtained with this sample; knowing these points would not aid in comparing these groups with any others.

Appendix B

Instruments, Observers' Manual, Administration and Coding Instructions

Appendix B

With the exception of the California Achievement Test and the "School Environment Preference Schedule," all instruments used in the main study are included in this section. Among these are the six questionnaires given to the children (booklets F, G, H, J, K and L), the two questionnaires given to the teachers, ("Teacher Views of Students" and "Teacher Description of Classroom Activities"), and the observers' form and manual for the classroom observation system. The codes and coding definitions used in scoring the inquiry and creativity items from booklets F, G, K, and L, and the instructions to the questionnaire administrators are also included.

Locations of Scales in Questionnaires

Following is a list of the characteristics measured in the children's questionnaires, and the location of each:

Inquiry skill - Booklets F, G, K and L, page 1 of each.

Writing quality - Assessed from inquiry items, listed above.

Creativity: Uses - Booklets F and K, Pp. 10-11.

Creativity: Patterns - Booklet G, Pp. 9-10, Booklet L, Pp. 11-12.

Task self-direction - Booklets F and K, Pp. 2-3, items 1-6.

Democratic attitudes: assertion - Booklets F and K, items 7, 9, 13, 20.

Democratic attitudes: equality of representation - Booklets F and K, items 8, 12, 18, and 21.

Democratic attitudes: equality of participation - Booklets F and K, items 10, 14, 15, and 17.

Democratic attitudes: compromise - Booklets F and K, items 11, 16, 19, and 22.

Value on group activities - Booklets F and K, items 23-34.

Cooperation vs. competition - Booklets F and K, items 35-43.

Decision-making autonomy - Booklets G and L, Pp. 2-3, items 1-10.

Tolerance for differences - Booklets G and L, Pp. 3-4, items 11-14.

Concern for others - Booklets G and L, Pp. 4-5, items 15-23.

Self-esteem - Booklet G, P. 6, items 1-12, Booklet L, P. 8, items 1-12.

Self- and Class-evaluations - Booklet L, Pp. 6-7, items 1-8.

Personal expression vs. structured role orientation - Booklet H, P. 2-3, items 1-12.

Fear of failure - Booklet H, P. 3-4, items 13-22.

Intrinsic motivation - Booklet H, Pp. 4-6, items 1-12.

Class characteristics preferences - Booklet H, Pp. 6-10, items 1-26.

Intellectual achievement responsibility - Booklet H, Pp. 11-13.

Locus of instigation - Booklet J, Pp. 1-4, items 1-15.

Achievement motivation - Booklet J, Pp. 4-7, items 1-20.

Task preference generality-specificity - Booklet J, Pp. 7-11, items 1-12.

Social desirability - Booklet J, Pp. 11-12, items 1-24.

Instructions to Questionnaire Administrators

On arriving at a school, the questionnaire administrator should go to the office and explain that the T (name) is taking part in a research project directed by Dr. Solomon, and that an appointment to visit T at ——— (time) has been made. (Even on subsequent visits to the same school, the administrator must still go to the office first before going to a particular classroom.)

If T is absent, ask if the substitute T would mind having the Ss fill in the questionnaires, since this can be done without any help from the T. If it is not convenient, try to set up another visit. Likewise, if there's an unforeseen change in schedule, try to set up another time with the T. If it's not possible to arrange a new time there and then, it will be done through the office.

If any problems, changes, or questions arise, contact Dan Solomon or Art Kendall as soon as possible: phone 279-3633.

All T's have received a memorandum (see attached) explaining details of the questionnaire administration, and suggesting ways in which they can help if they want to do so. They have been told their assistance is not required, but would be welcome. If they ask whether they can leave the room, the answer should be yes.

Each administrator should follow the format suggested in this manual when explaining the questionnaires to Ss, so that a standard procedure is maintained. (However, the procedure and points should be learned thoroughly so that it is not necessary to read the general instructions.) When the booklets are being collected, they should be checked for completeness, including cover sheets. It may be necessary to question Ss, e.g., about father's occupation (booklets K, L), if that item has not been answered; or to ask Ss to complete items that have been left out.

The first two booklets, F and G, are a pretest of creativity and certain values; H and J are personality tests; K and L are creativity and values post tests. The S.E.P.S. (School Environment Preference Schedule) will be given at the same time as booklet J. You should be very familiar with the contents of each booklet before you administer it.

Anything noticed during questionnaire administration that might be useful for observers to know about a class, or any comments or observations about any aspects of the class visits are welcomed. Those who are going to be observers should use testing as an opportunity to get a feel for differences and similarities between classes. O's should be familiar with the observation manual before beginning testing.

Although appearance should be irrelevant, try to avoid dress, etc., that might put off people with conventional standards, or that might attract undue attention from teachers or children.

T can be asked whether Ss should go to the restroom before a questionnaire is given.

All booklet instructions and items are to be read aloud. It would be advisable to spend some time practicing this before your first visit. The reading should be neither monotonous nor dramatic. It is particularly important, when reading questions in which one alternative is to be selected, to avoid giving more emphasis or a different intonation or inflection to one or the other alternative. Series of items which have the same responses repeated in a series ("strongly agree", etc.) in the same order will probably not have to be read out every time. But where the responses change between sections, or the order of the alternatives (or their wording) changes between items, they should all be read aloud each time (e.g., items 1 - 15, booklet J).

Help given to Ss during administration should be limited to restating or rewording directions, giving word meaning, finding the place where O is reading. O should be careful not to indicate a particular answer, e.g., S: "Is this the right answer?" O: "If that's what you feel."

First Visit: Booklet F

Hi. My name is __________. I'm here from the school board because we're interested in finding out what kids think about different things. I have a booklet here for each of you, and I'd like you to fill in the answers to the questions inside. These aren't questions that have right and wrong answers. Just give the answer that comes closest to what you really think. You don't have to worry about your answer being the same as everyone else's----whatever you think will be interesting to us. Other people will be coming back some other times to ask you some more questions and to watch your class in action. Are there any questions so far? If you have any questions later, while you're filling in the booklet, just raise your hand.

When I pass out these booklets, I'd like you to fill in the space on the cover--there's a space for your name and school, and a few other things like that. Don't forget to put your last name as well as your first. When you've finished that, wait for me, because when everyone's finished, I'm going to read out the questions inside.

(Pass out booklets, and when everyone's ready . . .)

The first question is a problem; it asks you to tell how you would go about solving it. It doesn't ask you to tell what the answer to the problem is, but only how you would try to find an answer. I'll read the problem to you... (see F)

(Repeat problem instructions as necessary. After 5 minutes, unless everyone's already finished, tell Ss that they have 2 more minutes. After 2 minutes, if some Ss are still working on the problem, explain that they don't have to fill the page--the ideas they've had already will be enough.)

Turn to the next page in the booklet. In this section of the booklet where it says Agree or Disagree, there's a statement or a sentence about something, and then you're asked to say how much you agree or disagree with what it says. You show how much you agree or disagree by circling one of the numbers. Circle 1 if you strongly disagree; 2, if you disagree; 3, if you agree; 4, if you strongly agree. Only circle one number for each statement I read to you, and please don't skip any, even if it's difficult to choose.

(Ask if there are any questions, then read each item, repeating when necessary, and giving Ss time to make a choice.)

Turn to the next page in the booklet--this part is an imagination game, and you can write down whatever you think of. There are two questions in this game. First, do the first one. When you're done with that, just go on and do the second, on the last page of the booklet. I'll read you what it says...(see booklet).

Collect the questionnaires and check for completeness--ask Ss to fill in any answers they have omitted. Please remember to thank Ss for doing the booklet.

Second Visit: Booklet G

Hi. [My name is ____________.] I'm here [again] with another booklet for you to fill out. It's very much like the first one you did. I'd like you to do the cover sheet first with your name and school as you did before, but don't begin the questions until everyone's ready and I can read the instructions to you.

(Pass out booklets, and when everyone's completed the cover sheet...)

For this first question, we'd like you to think about how you would try to solve a mystery.

(Read item and repeat as necessary. Follow the 5 minute procedure, as for the first visit.

Then turn to Agree/Disagree section and explain exactly as for the first visit, mentioning that it's like the last booklet they did for us. Read each item in this section, allowing time for Ss to make a choice after each statement.)

This next section of the booklet is called I THINK I AM. I will read each statement, or sentence, and you can circle the number above the one answer that tells how often you think you are that way. Circle number 1 if you're always that way; number 2, if you're that way most of the time... (read all 5 possible responses, then begin with item 1, rereading when necessary).

On the next page, there's a pattern game with two questions. After you're done with the first, go on and do the second, on the last page of the booklet. First, there's an example...

(Read explanation in the booklet and then the first item.)

Collect and check booklets for completeness.

Fourth Visit: Booklet J and S.E.P.S.

Hi. [My name is ________________.] I'm here [again] with another questionaire for you to fill out. This is a new short one (hold up SEPS) and then there's one very much like the one you did last time. I'll pass out the short one first and you can fill in your name and school on the side (demonstrate). Wait for me before you begin answering the other questions.

(When everyone's ready...)

This questionnaire has a statement or a sentence about something, and then you're asked to say how much you agree or disagree with what it says. You show how much you disagree or agree by blackening one of the spaces with your pencil. The letters next to the spaces are SA, for strongly agree; A, agree; U, undecided; D, disagree; SD, strongly disagree. You must choose which one of these is closest to how you really feel, and then you blacken the space under it. Only blacken one space for every statement I read to you, and please don't skip any questions, even if it's difficult to decide.

(Answer any questions. Read questionnaire, giving time for Ss to make choices; collect; and check for completeness before leaving room.)

Fifth and Sixth Visits: Booklets K and L

These booklets are very similar to booklets F and G and similar phrases should be used in giving directions (see First and Second visits.)

Seventh, Eighth, and Ninth Visits: Achievement Tests:

These tests will be given following procedures in CAT manuals.

CLASS VISIT SCHEDULE

A) Initial questionnaires: (Sept., Oct.)

Visit 1 - Booklet F (Inquiry, values and attitudes, creativity)

Visit 2 - Booklet G (Inquiry, values & attitudes, creativity)

Visit 3 - Booklet H (Personality measures)

Visit 4 - Booklet J (Personality measures)

SEPS (School Environment Preference Schedule)

B) 8 observation visits (Oct. - April)

C) Final questionnaires (April, May)

Visit 1 - Booklet K (Inquiry, etc. - largely repeat of F)

Visit 2 - Booklet L (Inquiry, etc. - largely repeat of G)

D) California Achievement Test (May)

Visit 1 - Reading

Visit 2 - Math

Visit 3 - Language

QUESTIONNAIRES

BOOKLET F

Name ____________________

School ____________________

Grade ____________________

Teacher ____________________

Your age ____________________

Your sex (circle one) boy girl

A Problem

Pretend you are an engineer trying to decide on the best place to build a bridge across a river. What would you do to help you decide? Write down the things you would do to help you decide.

Agree or Disagree?

Read each statement and then circle the number that tells how much you agree or disagree with it.

1. If you are puzzled about something, it is always better to try to find the answer for yourself than to have someone tell it to you.
    - 1 strongly disagree
    - 2 disagree
    - 3 agree
    - 4 strongly agree

2. When you want to make something, it is best to start with some help or advice from a teacher.
    - 1 strongly disagree
    - 2 disagree
    - 3 agree
    - 4 strongly agree

3. When you want to find out more about something, you should just go to the library and see what you can dig up, without getting help.
    - 1 strongly disagree
    - 2 disagree
    - 3 agree
    - 4 strongly agree

4. If you want to fix a broken toy, you should ask for help right away so you won't waste a lot of time on it.
    - 1 strongly disagree
    - 2 disagree
    - 3 agree
    - 4 strongly agree

5. When you're working on a project, you should often get help and advice from the teacher, so you won't make a lot of mistakes.
    - 1 strongly disagree
    - 2 disagree
    - 3 agree
    - 4 strongly agree

6. The best way to learn about how a camera works is to try to build one yourself, without any help.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

7. Four kids are making up some rules for a new game. Three of them agree on a rule; the fourth one doesn't like it. Since the others agree, he should not say anything about it.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

8. Kids who get in trouble on one class trip should not be allowed to vote on where to go for the next trip.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

9. Your work group is planning the next science project. Before you get to say what you would like, everyone else has said they want to study volcanoes. You should not bother to say what you would like to do.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

10. When kids are playing a game against another team, the worst players should get to play as much as anyone else.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

11. When you have an opinion, you should stick to it even if everyone says you're wrong.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

12. When the kids in a class at school are voting on something, the kids who are always making noise should not be allowed to vote.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

13. Some kids are trying to make up a play for a school assembly. One of them has thought of something, but is sure the other kids won't like it. He should keep quiet about it.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

14. It spoils the fun to let people who don't know the rules play games.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

15. Kids who get in trouble on one trip should not get to go on the next trip.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

16. Two friends are trying to decide what to do on a Saturday afternoon. One thinks they should go to a movie; the other thinks they should go to the park.

Each should just do what he wants to by himself.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

16a. If you disagreed in Number 16, write in what you think they should do.

17. When kids are playing games, the ones who don't know how to play should get to play as much as anyone else.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

18. New members should be in a club for a while before they get to vote on things.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

19. When two people argue about something, one of them is right and one is wrong.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

20. Your family is planning an outing. You already know that everyone else except you wants to go to a museum. You should not say what you want to do.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

21. The best students in a class should be the ones to decide which new project the class should start.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

22. Two friends are playing "Wizard of Oz" and both want to be the scarecrow.

The one who thought up the game should get to be the scarecrow.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

22a. If you disagreed in No. 22, write in what you think they should do.

23. You learn more by working on projects with groups of kids than by yourself.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

24. Kids get more interested in a project when they work in a group than when they work by themselves.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

25. Group projects get so mixed up that often the best ideas don't get used.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

26. It is more fun to work on projects by yourself than with groups of kids.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

27. When kids are working on group projects, a few people always end up doing all the work.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

28. You learn more by doing scientific experiments by yourself than with groups of kids.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

29. People in group projects have a very good time working together.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

30. It is more fun to work on math problems with groups of kids than by yourself.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

31. There is so much argument in group projects that nothing ever gets done.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

32. It is more fun to do scientific experiments with groups of kids than by yourself.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

33. You learn more by working on math problems by yourself than with a group of kids.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

34. Group project results are always good because the best ideas are used.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

35. Classes are best when everyone tries to do better work than everyone else.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

36. School is nice only if everybody shares everything.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

37. It is better for a bunch of kids to work together painting one big picture than for each kid to try to paint the best picture.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

38. You learn more when you try to do better than other kids in school than when you try to help other kids in school.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

39. It is better to give prizes to kids who do the best work than to give them to a whole class for doing a good job working together.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

40. Kids can make up a better story working by themselves than by working together and helping each other.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

41. It is more fun to play games if you're trying to win instead of just fooling around.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

42. You learn spelling words better when there is going to be a spelling contest.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

43. Games are most fun when you play any old way and don't care whether you win or lose.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

Uses Game

This is an imagination game. In this game, we'll name an object and ask you to write down lots of different ways that it could be used. For example, if the object is string, you might say that it could be used to hold up pants, tie packages, attach a fish hook, jump rope, sew with, hang clothes, pull shades, and a lot of other things. Alright, here is the first one. Take as much time as you want.

Write down all the different ways you could use a chair.

Now here is another one. Write down all the different ways you could use a button (from a coat).

BOOKLET G

Name ____________________

School ____________________

Grade ____________________

Teacher ____________________

Your age ____________________

Your sex (circle one) boy girl

A Mystery

You are hiking with some friends and come across a "ghost town." How could you find out why no-one lives there any more? Write down the things you could do to find out.

Agree or Disagree?

Read each statement and then circle the number that tells how much you agree or disagree with it.

1. Each kid should decide for himself what he needs to learn.

    1 strongly disagree
    2 disagree
    3 agree
    4 strongly agree

2. Parents should be the ones to decide what time kids should go to bed.

    1 strongly disagree
    2 disagree
    3 agree
    4 strongly agree

3. Teachers should be the ones to decide what the classroom rules should be.

    1 strongly disagree
    2 disagree
    3 agree
    4 strongly agree

4. Teachers should be the ones to decide how good a kid's work is.

    1 strongly disagree
    2 disagree
    3 agree
    4 strongly agree

5. Kids should be the ones to decide if they need to do homework.

    1 strongly disagree
    2 disagree
    3 agree
    4 strongly agree

6. Kids should be the ones to decide where they should sit in class.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

7. Teachers should be the ones to decide what kids should work on in school.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

8. Parents should be the ones to decide what kids should wear to school.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

9. Kids should be the ones to decide what time to come in at night.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

10. Kids should be the ones to decide when to start on a new project.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

11. The best kind of neighborhood to live in is one with people who are the same in their hobbies, jobs, and interests.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

12. Only kids who have the same ideas and interests can be good friends.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

13. If a new kid came to school who talked and dressed differently from the others, it would be best for him to try to be more like everyone else.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

14. Classes are best when most of the kids have the same likes and interests.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

15. A kid has enough schoolwork of his own to look after without worrying about other kids'.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

16. People should look after themselves and not butt into other people's problems.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

17. It is important for you to help a kid who keeps doing bad things.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

18. Kids who have trouble with schoolwork should work it out by themselves.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

19. We should take care of ourselves and let others take care of themselves.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

20. It is important for you to take extra time to help kids who don't understand something.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

21. It would be a big waste of time if you jumped to help people whenever they had problems.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

22. When people don't have many friends, it is up to them to do something about it.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

23. Everybody has enough problems of their own without worrying about other people's.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

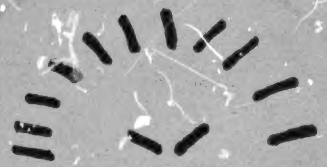
Here are some words that tell different ways kids are. Please read each one and circle the number that tells how often you think you are that way; either always, most of the time, about half the time hardly ever, or never.

I THINK I AM:

1. able to get along with other kids	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
2. not able to figure things out in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
3. scared to take chances	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
4. a good worker in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
5. happy with myself	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
6. not as smart as other kids in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
7. trying my best in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
8. not the way I would like to be	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
9. sure of myself	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
10. doing poorly in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
11. angry with myself	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
12. doing a good job in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never

Pattern Game

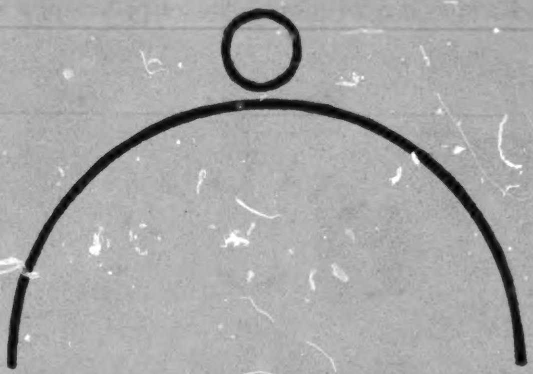
Here's a game where you can really feel free to use your imagination. We'll show you some drawings. Your job is to look at them and then write down all the things you think each drawing could be. Here is an example:



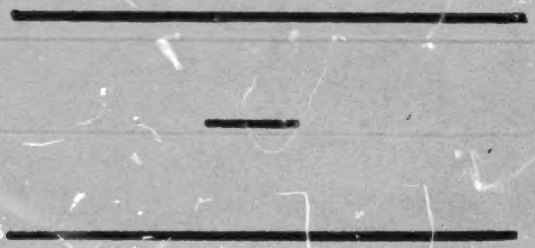
After looking at this, you might say that it could be the rising sun, a porcupine, eye lashes, a brush, a carnation, and probably a lot of other things.

Alright, the first one is on the next page. Take as much time as you want.

Write down all the things you think this could be.



Now here is another one. Write down all the things you think this could be.



BOOKLET H

Name ____________________________

School ____________________________

Grade ____________________________

Teacher ____________________________

Your age ____________________________

Your sex (circle one) boy girl

Which would you rather do?

Instructions:

Each of these questions describes two activities. Please pick the one you would usually like doing better and circle the letter in front of that one. Please don't skip any, even if it is a hard choice to make.

I would rather:

1. a. play in a game where everyone knows the rules.

b. make up a new game.

2. a. be in a place where I know exactly what I am supposed to do.

b. be in a place where I pick what I want to do.

3. a. talk with a friend about how I feel about things.

b. talk with a friend about a project we're working on together.

4. a. follow plans in building a model from a kit.

b. design and build something from scraps of wood.

5. a. go to a party where almost nothing is planned beforehand.

b. go to a party where things are all planned beforehand.

6. a. work when I want to.

b. work when I'm supposed to.

7. a. help out at home when I think it would be useful.

b. have certain chores to do every day.

8. a. write a story about a subject the teacher picks.

b. write a story about a subject I pick.

9. a. be in a club where adult leaders plan the activities for the kids.
b. be in a club where the kids who belong plan the activities.

10. a. think out the best way to do something, and work hard to do it.
b. know the rules for doing something, and work hard to follow them.

11. a. follow a time plan, so I know what I'll be doing at different times.
b. do things as they come, with no time plan.

12. a. be in a group where members choose the jobs they do.
b. be in a group where members are told what jobs to do.

13. a. play checkers against someone a little better than I am.
b. play checkers against someone a little worse than I am.

14. a. work a puzzle I know I can do.
b. work a hard puzzle I've never done before.

15. a. keep working on a math problem I haven't been able to solve.
b. stop working on a math problem that is too hard, and find an easier one.

16. a. try to do a job that's very hard.
b. try to do a job that's fairly hard.

17. a. get a model to build like one I did a good job on last time.
b. get a model to build like one I messed up last time.

18. a. let my friends hear me play an instrument that I've just started learning.
b. practice by myself until I'm good enough to let others hear me play.

19. a. get hints to help me solve a hard problem.

    b. try to solve a hard problem without any hints.

20. a. tell my answer to a question only if I'm sure it's right.

    b. tell my answer to a question even if it might be wrong.

21. a. work on getting better in a subject I'm not too good at.

    b. work on getting better in a subject I'm pretty good at.

22. a. play a game that is hard for me to win.

    b. play a game that is easy for me to win.

Why?

The next few questions describe kids doing different kinds of things, and ask you about the reasons they are probably doing them. Circle the letter in front of the one answer which you think would most probably or usually be the reason for doing that thing.

1. Mary is practicing the piano. Why?

    a. Her piano teacher will be pleased with her.

    b. She wants to learn to play it well.

2. John is painting a picture. Why?

    a. He wants to get a good grade in his art class.

    b. He enjoys painting pictures.

3. Peter is reading a book. Why?

    a. He wants to find out more about something.

    b. His teacher will give him "extra credit."

4. Sally is writing a story. Why?

   a. She likes writing stories.

   b. She wants to please her parents (or friends).

5. Pam is working on some math problems. Why?

   a. She enjoys doing them.

   b. She wants to do well in school.

6. Judy is working on a puzzle that her uncle gave her. Why?

   a. She wants to show him that she likes it.

   b. She enjoys trying to work it out.

7. Jim is building a model. Why?

   a. He wants to show his parents what a good job he can do.

   b. He likes building models.

8. Dan is trying to fix a broken bike. Why?

   a. He wants to see if he can do it.

   b. His parents will be surprised and pleased if he succeeds.

9. Susan is listening to her teacher. Why?

   a. She wants to hear what she is saying.

   b. She might get in trouble if she doesn't listen.

10. Tom is working to make his handwriting better. Why?

   a. His teacher will be pleased with him.

   b. He wants to be able to write better.

11. George is building a treehouse. Why?

    a. He likes doing it.

    b. His friends will like playing with him in it.

12. Joyce is studying her spelling. Why?

    a. She wants to get a good grade in spelling.

    b. She wants to learn to spell better.

What kind of class?

The questions in this part ask about the kind of school class you think you would like best and learn the most in. There are no right or wrong answers. Circle the letter in front of the answer that comes closest to what you really think.

1. I would most like a class where

    a. kids go and get books or materials whenever they want to.

    b. kids only go and get books or materials if the teacher says it's O.K.

    c. the teacher gives out books or materials when they are needed.

2. I would most like a class where

    a. all the kids work on the same things at the same time.

    b. different kids are always working on different things.

    c. sometimes everyone does the same things; at other times kids work on different things.

3. I would most like a class where

    a. the teacher gives kids any help they need.

    b. kids spend a lot of time helping each other.

    c. the teacher does most of the helping, but kids do some too.

4. I would most like a class where

    a. the kids choose what they want to do.

    b. the teacher and kids together plan what to do.

    c. the teacher plans what the kids will do.

5. I would most like a class where

    a. kids mostly work alone.

    b. kids mostly work in groups.

    c. some work is done alone and some in groups.

6. I would most like a class where

    a. the teacher spends a lot of time talking to the whole class together.

    b. the teacher spends some time talking to the whole class together.

    c. the teacher almost never talks to the whole class together.

7. I would most like a class where

    a. kids stay in their seats, unless the teacher says they can go somewhere.

    b. kids walk around the class whenever they want to.

    c. kids can walk around a little, if it doesn't get too noisy.

8. I would most like a class where

    a. kids decide if they want to work together on things.

    b. the teacher decides which kids will work together on which things.

    c. the teacher and kids talk together to decide who will work on which things.

9. I would most like a class where

    a. only the teacher checks and corrects kids' work.

    b. kids always check and correct each others' work.

    c. the teacher does most of the correcting, but kids do some too.

10. I would most like a class where

    a. things are very friendly and there's not much worry about the work.

    b. the main attention is on getting the work done right.

    c. things are fairly friendly, but people also pay attention to the work.

11. I would most like a class where

    a. kids talk to each other or the teacher whenever they want to.

    b. kids can talk only when the teacher calls on them.

    c. kids can talk to each other a little, if it's needed for what they're doing.

12. I would most like a class where

    a. the teacher takes a lot of time getting to know and working with each kid.

    b. the teacher takes some time getting to know and working with each kid.

    c. the teacher takes a little time getting to know and working with each kid.

13. I would most like a class where

    a. only the teacher talks with the kids about their work.

    b. kids talk with each other about their work, mostly without the teacher.

    c. sometimes the teacher talks about the work, and sometimes just the kids do.

14. I would most like a class where

    a. kids decide on all the rules, and punishments for breaking them.

    b. the teacher decides on the rules and punishments.

    c. the teacher and kids together decide on rules and punishments.

15. I would most like a class where

    a. kids work hard to see who can be best.

    b. kids help each other to learn and don't try to be best.

    c. kids help each other, but each still tries to be best.

16. I would most like a class where

    a. the teacher decides exactly what the kids should learn and how they should learn it.

    b. the teacher decides what the kids should learn, but they decide how to learn it.

    c. kids decide what to learn and how to learn it.

17. I would most like a class where

    a. work on any subject can start and end at any time.

    b. there are regular starting and ending times for each subject.

    c. there are regular starting times, but kids keep on as long as they want.

18. I would most like a class where

    a. the teacher follows a plan and doesn't make any changes.

    b. the teacher is always changing things around and trying new things.

    c. there is a plan, but the teacher makes some changes.

19. I would most like a class where

    a. kids learn ways to use new things by working and playing with them.

    b. kids are shown one way to use each new thing, and are not allowed to use it any other way.

    c. kids are shown one way to use each new thing, but can make up other uses too.

20. I would most like a class where

    a. all the kids are about the same age.

    b. there are kids of different ages, but each age group stays together.

    c. there are kids of different ages all mixed together.

21. I would most like a class where

    a. the teacher tells kids when they need to do homework.

    b. kids decide for themselves when they need to do homework.

    c. teacher and kids talk together and decide on the need for homework.

22. I would most like a class where

    a. there is a lot of testing.

    b. there is little testing.

    c. there is no testing.

23. I would most like a class where

    a. some kids know the work well, and some not so well, and each group stays together.

    b. all the kids know the work about as well as one another.

    c. kids who know the work well, and not so well are all mixed together.

24. I would most like a class where

    a. each kid works in a lot of different places around the classroom.

    b. each kid works mostly in one place, but does some work in other places too.

    c. each kid works at one desk or table.

25. I would most like a class where

    a. all the teaching is done by the teacher.

    b. the teacher does most of the teaching, but kids teach each other some too.

    c. kids spend a lot of time teaching each other.

26. I would most like a class where

    a. kids work on anything they want at any time.

    b. there is a time every day when kids pick what they want to work on.

    c. the teacher always decides what the kids should work on.

Why do things happen?

This part of the booklet describes a number of common experiences most of you have in your daily lives. These statements are presented one at a time, and following each are two possible answers. Read the description of the experience carefully, and then look at the two answers. Choose the one that describes what happens to you most often. Circle the letter in front of that answer. Be sure to answer each question according to how you really feel.

1. When you do well on a test at school, is it more likely to be

   a. because you studied for it, or

   b. because the test was especially easy?

2. When you have trouble understanding something in school, is it usually

   a. because the teacher didn't explain it clearly, or

   b. because you didn't listen carefully?

3. Suppose your parents say you are doing well in school. Is this likely to happen

   a. because your school work is good, or

   b. because they are in a good mood?

4. Suppose you study to become a teacher, scientist, or doctor and you fail. Do you think this would happen

   a. because you didn't work hard enough, or

   b. because you needed some help, and other people didn't give it to you?

5. When you learn something quickly in school, is it usually

   a. because you paid close attention, [illegible]

   b. because the teacher explained it clearly?

6. If a teacher says to you, "Your work is fine," is it

   a. something teachers usually say to encourage pupils, or

   b. because you did a good job?

7. When you find it hard to work arithmetic or math problems at school, is it
   - a. because you didn't study well enough before you tried them, or
   - b. because the teacher gave problems that were too hard?

8. When you forget something you heard in class, is it
   - a. because the teacher didn't explain it very well, or
   - b. because you didn't try very hard to remember?

9. When you read a story and remember most of it, is it usually
   - a. because you were interested in the story, or
   - b. because the story was well-written?

10. If your parents tell you you're acting silly and not thinking clearly, is it more likely to be
    - a. because of something you did, or
    - b. because they.happen to be feeling cranky?

11. When you don't do well on a test at school, is it
    - a. because the test was especially hard, or
    - b. because you didn't study for it?

12. When you win at a game of cards or checkers, does it happen
    - a. because you play real well, or
    - b. because the other person doesn't play well?

13. If people think you're bright or clever, is it
    - a. because they happen to like you, or
    - b. because you usually act that way?

14. Suppose you don't do as well as usual in a subject at school. Would this probably happen

    a. because you weren't as careful as usual, or

    b. because somebody bothered you and kept you from working?

15. Suppose you became a famous teacher, scientist or doctor. Do you think this would happen

    a. because other people helped you when you needed it, or

    b. because you worked very hard?

16. Suppose your parents say you aren't doing well in your school work. Is this likely to happen to you

    a. because your work isn't very good, or

    b. because they are feeling cranky?

17. When you find it easy to work arithmetic or math problems at school, is it usually

    a. because the teacher gave you especially easy problems, or

    b. because you studied your book well before you tried them?

18. If you can't work a puzzle, is it more likely to happen

    a. because you are not especially good at working puzzles, or

    b. because the instructions weren't written clearly enough?

19. If your parents tell you that you are bright or clever, is it more likely

    a. because they are feeling good, or

    b. because of something you did?

20. If a teacher says to you, "Try to do better," would it be

    a. because this is something she might say to get pupils to try harder, or

    b. because your work wasn't as good as usual?

BOOKLET J

Name ______________________________

School ______________________________

Grade ______________________________

Teacher ______________________________

Your age ______________________________

Your sex (circle one) boy girl

Why I do things

These questions ask about some of the reasons that you get started doing certain things. For many of the questions, you may think that all of the reasons listed are true, but pick the one that you think is the most important. If the activity is one that you haven't done, answer the way you think it would be if you did it.

1. When I read a difficult book, it is usually because

   a. I was told to, or had to.

   b. I was asked to, and agreed.

   c. I decided to.

   d. I just happened to pick it up.

2. When I practice an instrument, it is usually because

   a. I just started without thinking.

   b. I was told to, or had to.

   c. I was asked to, and agreed.

   d. I decided to.

3. When I visit a museum, it is usually because

   a. I decided to.

   b. I just happened to be there.

   c. I was asked to, and agreed.

   d. I was told to, or had to.

4. When I work hard to learn something, it is usually because

   a. I was asked to, and agreed.

   b. I can't think of anything else to do.

   c. I was told to, or had to.

   d. I decided to.

5. When I write a letter, it is usually because
   - a. I was told to, or had to.
   - b. I decided to.
   - c. I was asked to, and agreed.
   - d. I just started writing.

6. When I work a puzzle, it is usually because
   - a. I just came across it.
   - b. I decided to.
   - c. I was asked to, and agreed.
   - d. I was told to, or had to.

7. When I play a game of checkers, it is usually because
   - a. I asked someone.
   - b. I was asked to, and agreed.
   - c. I was told to, or had to.
   - d. The game just turned up.

8. When I write a story, it is usually because
   - a. I was asked to, and agreed.
   - b. I was told to, or had to.
   - c. I just started writing, and it became a story.
   - d. I decided to.

9. When I work a math problem, it is usually because
   - a. I decided to.
   - b. I just came across it.
   - c. I was told to, or had to.
   - d. I was asked to, and agreed.

10. When I build a model, it is usually because

    a. I came across it and started doing it.

    b. I was asked to, and agreed.

    c. I decided to.

    d. I was told to, or had to.

11. When I go to a playground, it is usually because

    a. I decided to.

    b. I just happened to be there.

    c. I was asked to, and agreed.

    d. I was told to, or had to.

12. When I clean up my desk, it is usually because

    a. I was asked to, and agreed.

    b. I just did it without thinking.

    c. I was told to, or had to.

    d. I decided to.

13. When I draw a picture, it is usually because

    a. I was told to, or had to.

    b. I decided to.

    c. I started by accident.

    d. I was asked to, and agreed.

14. When I join a club, it is usually because

    a. I was asked to, and agreed.

    b. I was told to, or had to.

    c. I decided to.

    d. I just came across it by accident.

15. When I read about a new topic, it is usually because

    a. I was told to, or had to

    b. I decided to.

    c. I came across it accidentally.

    d. I was asked to, and agreed.

What do you like?

Circle the letter in front of the answer that is truer for you for each of these questions:

1. I prefer

    a. working with others.

    b. working by myself.

2. I prefer jobs

    a. that I might not be able to do.

    b. which I'm sure I can do.

3. I would rather learn

    a. fun games.

    b. games where I would learn something.

4. I prefer a game

    a. where I'm better than anyone else.

    b. where everyone is about the same.

5. I would rather

    a. play games that don't have winners or losers.

    b. play games that you can win or lose at.

6. I would rather
    a. wait one or two years and have my parents buy me one big present.
    b. have them buy me several smaller presents over the same period of time.

7. When I am sick, I would rather
    a. rest and relax.
    b. try to do my school work.

8. I
    a. like a puzzle that takes hard work to solve.
    b. like a puzzle that is easy to solve.

9. Before class tests, I am
    a. often nervous.
    b. hardly ever nervous.

10. When I am playing in a game or sport, I am
    a. most interested in just having fun.
    b. most interested in winning.

11. When I am sure I can do a job
    a. I enjoy doing it.
    b. I become bored doing it.

12. After I lose at a game
    a. I want to play again right away.
    b. I want to do something else for a while.

13. After summer vacation, I am

    a. glad to get back to school.

    b. not glad to get back to school.

14. I talk in class

    a. less than other students.

    b. more than other students.

15. I enjoy painting pictures more

    a. when everyone's work gets put on the wall.

    b. when only the best work gets put on the wall.

16. If I were getting better from a serious illness, I would like to

    a. spend my time learning how to do something.

    b. relax.

17. I like playing a game when I am

    a. as good as my playmate.

    b. much better than my playmate.

18. I would prefer classes in which

    a. the students were all as good as one another at the work.

    b. I was better than almost all the others.

19. When I do things to help at home, I prefer to

    a. do usual things I know I can do.

    b. do things that are hard and I'm not sure I can do.

20. I would choose as work-partners

    a. other children who do well in school.

    b. other children who are friendly.

How much I like to do things

The next questions ask how much you would like or dislike doing some different things. After each thing is listed, circle the letter in front of the answer that shows how much you think you would like or dislike doing that thing.

How much would you like or dislike doing each of these things?

1. Working with some friends to solve a hard math problem

   (circle one of the following)

   a. I would like doing this very much.

   b. I would like doing this fairly well.

   c. I would like doing this a little.

   d. I would dislike doing this a little.

   e. I would dislike doing this pretty much.

   f. I would hate doing this.

2. Writing a story good enough for the school magazine prize

   a. I would like doing this very much.

   b. I would like doing this fairly well.

   c. I would like doing this a little.

   d. I would dislike doing this a little.

   e. I would dislike doing this pretty much.

   f. I would hate doing this.

3. Practicing kickball with your team

   a. I would like doing this very much.
   b. I would like doing this fairly well.
   c. I would like doing this a little.
   d. I would dislike doing this a little.
   e. I would dislike doing this pretty much.
   f. I would hate doing this.

4. Following complicated directions to put together a model

   a. I would like doing this very much.
   b. I would like doing this fairly well.
   c. I would like doing this a little.
   d. I would dislike doing this a little.
   e. I would dislike doing this pretty much.
   f. I would hate doing this.

5. Making a big snowman with some friends

   a. I would like doing this very much.
   b. I would like doing this fairly well.
   c. I would like doing this a little.
   d. I would dislike doing this a little.
   e. I would dislike doing this pretty much.
   f. I would hate doing this.

6. Trying to beat a good player in a game of ping-pong

   a. I would like doing this very much.

   b. I would like doing this fairly well.

   c. I would like doing this a little.

   d. I would dislike doing this a little.

   e. I would dislike doing this pretty much.

   f. I would hate doing this.

7. Being part of your class team in a spelling contest with another class

   a. I would like doing this very much.

   b. I would like doing this fairly well.

   c. I would like doing this a little.

   d. I would dislike doing this a little.

   e. I would dislike doing this pretty much.

   f. I would hate doing this.

8. Practicing dart throwing to become a better shot

   a. I would like doing this very much.

   b. I would like doing this fairly well.

   c. I would like doing this a little.

   d. I would dislike doing this a little.

   e. I would dislike doing this pretty much.

   f. I would hate doing this.

9. Trying to figure out a puzzle quicker than you did the last time
   - a. I would like doing this very much.
   - b. I would like doing this fairly well.
   - c. I would like doing this a little.
   - d. I would dislike doing this a little.
   - e. I would dislike doing this pretty much.
   - f. I would hate doing this.

10. Playing baseball on your team against another team
   - a. I would like doing this very much.
   - b. I would like doing this fairly well.
   - c. I would like doing this a little.
   - d. I would dislike doing this a little.
   - e. I would dislike doing this pretty much.
   - f. I would hate doing this.

11. Trying to win a school prize by making up the best song with some friends
   - a. I would like doing this very much.
   - b. I would like doing this fairly well.
   - c. I would like doing this a little.
   - d. I would dislike doing this a little.
   - e. I would dislike doing this pretty much.
   - f. I would hate doing this.

12. Making things out of clay

a. I would like doing this very much.

b. I would like doing this fairly well.

c. I would like doing this a little.

d. I would dislike doing this a little.

e. I would dislike doing this pretty much.

f. I would hate doing this.

This part lists a number of experiences that most children have at one time or another. Read each of these carefully. After you have read one, decide whether it does or does not fit you. If it does, circle the T (for true) in front of the statement; if it doesn't, circle the F (for false) in front of the statement.

T F 1. I always enjoy myself at a party.

T F 2. I never get angry if I have to stop in the middle of something I'm doing to eat dinner, or go to school.

T F 3. Sometimes I don't like to share my things with my friends.

T F 4. I am always respectful of older people.

T F 5. When I make a mistake, I always admit I am wrong.

T F 6. I have never felt like saying unkind things to a person.

T F 7. I always finish all of my homework on time.

T F 8. I am always careful about keeping my clothing neat, and my room picked up.

T F 9. Sometimes I feel like staying home from school even if I am not sick.

T F 10. I always help people who need help.

T F 11. Sometimes I argue with my mother to do something she doesn't want me to.

T F 12. I never say anything that would make a person feel bad.

T F 13. I am always polite, even to people who are not very nice.

T F 14. Sometimes I do things I've been told not to do.

T F 15. I always listen to my parents.

T F 16. I never forget to say "please" and "thank you."

T F 17. Sometimes I wish I could just "mess around" instead of having to go to school.

T F 18. I always wash my hands before every meal.

T F 19. I have never been tempted to break a rule or a law.

T F 20. I sometimes feel like making fun of other people.

T F 21. I am always glad to cooperate with others.

T F 22. I never get annoyed when my best friend wants to do something I don't want to do.

T F 23. I always do the right things.

T F 24. Sometimes I don't like to obey my parents.

BOOKLET K

Name ______________________

School ______________________

Grade ______________________

Teacher ______________________

Your age ______________________

Your sex (circle one) boy girl

What kind of work does your father do?

____

Where does he work? ______________________

What kind of work does your mother do?

____

Where does she work? ______________________

A Problem

Pretend that you are the mayor of a small city and you are trying to find a good spot to put a new playground. How would you figure out what was the best spot? Write down the things you could do to help you figure it out.

Agree or Disagree?

Read each statement and then circle the number that tells how much you agree or disagree with it.

1. If you are puzzled about something, it is always better to try to find the answer for yourself than to have someone tell it to you.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

2. When you want to make something, it is best to start with some help or advice from a teacher.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

3. When you want to find out more about something, you should just go to the library and see what you can dig up, without getting help.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

4. If you want to fix a broken toy, you should ask for help right away so you won't waste a lot of time on it.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

5. When you're working on a project, you should often get help and advice from the teacher, so you won't make a lot of mistakes.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

6. The best way to learn about how a camera works is to try to build one yourself, without any help.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

7. Four kids are making up some rules for a new game. Three of them agree on a rule; the fourth one doesn't like it. Since the others agree, he should not say anything about it.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

8. Kids who get in trouble on one class trip should not be allowed to vote on where to go for the next trip.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

9. Your work group is planning the next science project. Before you get to say what you would like, everyone else has said they want to study volcanoes. You should not bother to say what you would like to do.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

10. When kids are playing a game against another team, the worst players should get to play as much as anyone else.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

11. When you have an opinion, you should stick to it even if everyone says you're wrong.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

12. When the kids in a class at school are voting on something, the kids who are always making noise should not be allowed to vote.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

13. Some kids are trying to make up a play for a school assembly. One of them has thought of something, but is sure the other kids won't like it. He should keep quiet about it.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

14. It spoils the fun to let people who don't know the rules play games.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

15. Kids who get in trouble on one trip should not get to go on the next trip.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

16. Two friends are trying to decide what to do on a Saturday afternoon. One thinks they should go to a movie; the other thinks they should go to the park.

Each should just do what he wants to by himself.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

16a. If you disagreed in Number 16, write in what you think they should do.

17. When kids are playing games, the ones who don't know how to play should get to play as much as anyone else.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

18. New members should be in a club for a while before they get to vote on things.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

19. When two people argue about something, one of them is right and one is wrong.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

20. Your family is planning an outing. You already know that everyone else except you wants to go to a museum. You should not say what you want to do.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

21. The best students in a class should be the ones to decide which new project the class should start.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

22. Two friends are playing "Wizard of Oz" and both want to be the scarecrow.

The one who thought up the game should get to be the scarecrow.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

22a. If you disagreed in No. 22, write in what you think they should do.

---

23. You learn more by working on projects with groups of kids than by yourself.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

24. Kids get more interested in a project when they work in a group than when they work by themselves.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

25. Group projects get so mixed up that often the best ideas don't get used.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

26. It is more fun to work on projects by yourself than with groups of kids.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

27. When kids are working on group projects, a few people always end up doing all the work.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

28. You learn more by doing scientific experiments by yourself than with groups of kids.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

29. People in group projects have a very good time working together.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

30. It is more fun to work on math problems with groups of kids than by yourself.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

31. There is so much argument in group projects that nothing ever gets done.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

32. It is more fun to do scientific experiments with groups of kids than by yourself.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

33. You learn more by working on math problems by yourself than with a group of kids.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

34. Group project results are always good because the best ideas are used.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

35. Classes are best when everyone tries to do better work than everyone else.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

36. School is nice only if everybody shares everything.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

37. It is better for a bunch of kids to work together painting one big picture than for each kid to try to paint the best picture.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

38. You learn more when you try to do better than other kids in school than when you try to help other kids in school.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

39. It is better to give prizes to kids who do the best work than to give them to a whole class for doing a good job working together.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

40. Kids can make up a better story working by themselves than by working together and helping each other.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

41. It is more fun to play games if you're trying to win instead of just fooling around.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

42. You learn spelling words better when there is going to be a spelling contest.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

43. Games are most fun when you play any old way and don't care whether you win or lose.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

Uses Game

In this imagination game, we'll name an object and ask you to write down lots of different ways that it could be used. For example, if the object is string, you might say that it could be used to hold up pants, tie packages, attach a fish hook, jump rope, sew with, hang clothes, pull shades, and a lot of other things. Alright, here is the first one. Take as much time as you want.

Write down all the different ways you could use a cork.

Now here is another one. Write down all the different ways you could use a **shoe**.

BOOKLET L

Name ______________________________

School ______________________________

Grade ______________________________

Teacher ______________________________

Your age ______________________________

Your sex (circle one) boy girl

What kind of work does your father do?

____

Where does he work? ______________________________

What kind of work does your mother do?

____

Where does she work? ______________________________

A Mystery

You come home and find your room messed up, although it was neat when you left. You wonder whether it got messed up by the wind, a burglar, or someone just fooling around. How would you figure out which it was? Write down the things you could do to find out.

Agree or Disagree?

Read each statement and then circle the number that tells how much you agree or disagree with it.

1. Each kid should decide for himself what he needs to learn.

1 strongly disagree

2 disagree

3 agree

4 strongly agree

2. Parents should be the ones to decide what time kids should go to bed.

1 strongly disagree

2 disagree

3 agree

4 strongly agree

3. Teachers should be the ones to decide what the classroom rules should be.

1 strongly disagree

2 disagree

3 agree

4 strongly agree

4. Teachers should be the ones to decide how good a kid's work is.

1 strongly disagree

2 disagree

3 agree

4 strongly agree

5. Kids should be the ones to decide if they need to do homework.

1 strongly disagree

2 disagree

3 agree

4 strongly agree

6. Kids should be the ones to decide where they should sit in class.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

7. Teachers should be the ones to decide what kids should work on in school.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

8. Parents should be the ones to decide what kids should wear to school.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

9. Kids should be the ones to decide what time to come in at night.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

10. Kids should be the ones to decide when to start on a new project.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

11. The best kind of neighborhood to live in is one with people who are the same in their hobbies, jobs, and interests.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

12. Only kids who have the same ideas and interests can be good friends.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

13. If a new kid came to school who talked and dressed differently from the others, it would be best for him to try to be more like everyone else.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

14. Classes are best when most of the kids have the same likes and interests.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

15. A kid has enough schoolwork of his own to look after without worrying about other kids'.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

16. People should look after themselves and not butt into other people's problems.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

17. It is important for you to help a kid who keeps doing bad things.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

18. Kids who have trouble with schoolwork should work it out by themselves.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

19. We should take care of ourselves and let others take care of themselves.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

20. It is important for you to take extra time to help kids who don't understand something.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

21. It would be a big waste of time if you jumped to help people whenever they had problems.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

22. When people don't have many friends, it is up to them to do something about it.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

23. Everybody has enough problems of their own without worrying about other people's.

1 strongly disagree
2 disagree
3 agree
4 strongly agree

For these questions, circle the number in front of the answer that comes closest to what you think.

1. How much do you think you have learned in school this year?

1 – not much

2 – a little

3 – pretty much

4 – very much

5 – more than ever before

2. How interesting have you found school this year?

1 – not very interesting

2 – a little interesting

3 – pretty interesting

4 – very interesting

5 – more interesting than ever before

3. How much fun have you had in school this year?

1 – not much

2 – a little

3 – pretty much

4 – a lot

5 – more than ever before

4. How many kids in this class would you like to stay close friends with?

1 – none of them

2 – 1 or 2 of them

3 – 5 or 6 of them

4 – about half of them

5 – most of them

5. How many of the other kids do you think would like to stay close friends with you?

1 – none of them

2 – 1 or 2 of them

3 – 5 or 6 of them

4 – about half of them

5 – most of them

6. How many kids do you think don't have many friends in this class?

1 – none of them

2 – 1 or 2 of them

3 – 5 or 6 of them

4 – about half of them

5 – most of them

7. How often do kids in this class get mad at each other or fight?

1 – never

2 – not very often

3 – sometimes

4 – pretty often

5 – very often

8. How often do kids in this class help each other?

1 – never

2 – not very often

3 – sometimes

4 – pretty often

5 – very often

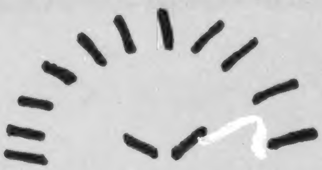
Here are some words that tell different ways kids are. Please read each one and circle the number that tells how often you think you are that way; either always, most of the time, about half the time, hardly ever, or never.

I THINK I AM:

1. able to get along with other kids	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
2. not able to figure things out in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
3. scared to take chances	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
4. a good worker in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
5. happy with myself	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
6. not as smart as other kids in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
7. trying my best in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
8. not the way I would like to be	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
9. sure of myself	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
10. doing poorly in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
11. angry with myself	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never
12. doing a good job in school	1 always	2 most of the time	3 about half the time	4 hardly ever	5 never

Pattern Game

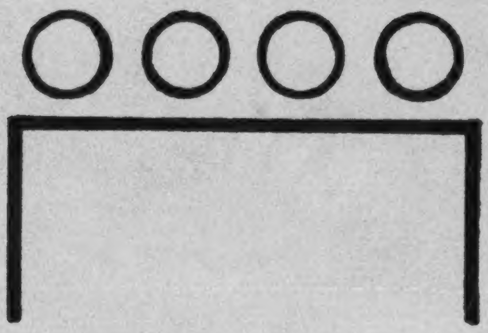
Here's a game where you can really feel free to use your imagination. We'll show you some drawings. Your job is to look at them and then write down all the things you think each drawing could be. Here is an example:



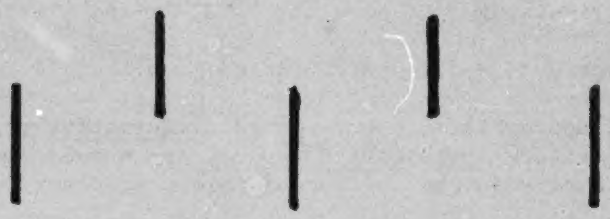
After looking at this, you might say that it could be the rising sun, a porcupine, eye lashes, a brush, a carnation, and probably a lot of other things.

Alright, the first one is on the next page. Take as much time as you want.

Write down all the things you think this could be.



Now here is another one. Write down all the things you think this could be.



Codes for Inquiry and Creativity Items

Inquiry Skill

The following coding categories were applied to each of the four inquiry items (found on the first pages of booklets F, G, K, and L)--the bridge, the ghost town, the playground, and the disarranged room.

1 - Number of appropriate, non-repeated, informative responses (responses which constitute approaches to solutions; non-attempts and direct statements of solutions or answers are scored zero)

2 - Number of site-extended responses (responses which relevantly range beyond the specific geographic context, which seek information from beyond or outside the site)

3 - Completeness - a rating of the degree to which the total approach seems to include all necessary areas so that a good decision or solution can be reached.

    0 - No attempt or inappropriate
    1 - Very incomplete, minimal appropriate response
    2 - Incomplete, but more than minimal
    3 - Approaching completeness
    4 - Enough relevant areas included so that a rational decision can be made

4 - Writing quality - A rating of the effectiveness of the communication; including clarity, expressiveness, coherence of statement, in the judgment.

Creativity

These categories were applied to the four "uses" items (found on the last pages of booklets F and K) and the four "patterns" items (found on the last pages of booklets G and L). It will be noted that the cutoff point for "uncommon" responses is 10% for the Uses items and 1.5% for the Patterns items. These points were found to give similar, and relatively unskewed, distributions in the pilot study for the different types of items. The determination of which responses were "common" and which "uncommon" was taken from the pilot study calculations, for the four items which were repeated from that study. In order to determine the cutoff points for the four items which we had not used previously, a subsample of seven classes was randomly selected from the total of 50. Within this subsample (comprising about 180 children; about 14% of the total sample, and similar to the total number of children who had been involved in the pilot study), all the creativity responses were recorded, and the number of children giving each response determined. Lists were then made of the "common" and "uncommon" responses for each item as found in the subsample, and were later applied to the creativity scoring for the total sample. The following coding categories were used:

1 - Number of appropriate, non-repeated responses

2 - Number of uncommon responses (given by 10% of subsample, or less, for uses items; by 1.5% or less, for patterns items)

3 - Elaboration - A rating of the degree to which responses are detailed and spelled out, specifically described, embellished.

0 - No attempt or inappropriate
1 - No elaboration on any response
2 - Slight elaboration
3 - Moderate elaboration
4 - Much elaboration

4. Imaginativeness - A rating of the degree to which the responses evidence the play of imagination; responses which deviate from ordinary uses of and settings (for "uses" items), but yet are functional or possible, and those which involve shifts of perspective or scale (e.g., viewing "patterns" objects rotated, upsidedown, from above or underneath), would be among indices of this quality.

0 - No attempt or inappropriate
1 - Very little imaginativeness
2 - Slight imaginativeness
3 - Moderate imaginativeness
4 - Much imaginativeness

Classroom Observation Form

A. School ______________________ Teacher(s) ______________________

Observer ______________________ Date ______________ Time of day:

AM	1
PM	2

Single schoolroom	1
Combined schoolroom	2
Open area	3

Background noise level:

low	1
moderate	2
high	3

Crowdedness:

low	1
moderate	2
high	3

Tables/desks in:

rows	1
no rows	2

No. children in space:

<20	1
20-25	2
26-30	3
31-40	4
41-50	5
> 50	6

Floors:

bare	1
small rugs	2
room-size rug	3
carpet	4

- -

B. No. adults in space (not O): _____

No. interest centers: _____

Amount equipment visible and accessible to Ss:

little	1
some	2
much	3
very much	4

Amount material visible and accessible to Ss:

little	1
some	2
much	3
very much	4

Plants in room:

none	1
few	2
some	3
many	4

Animals, fish, reptiles, etc., in room:

none	1
few	2
some	3
many	4

Other things from environment (rocks, sand, etc.):

none	1
few	2
some	3
many	4

Signs and pictures on walls:

none	1
some	2
many	3
very many	4

Probable source of wall displays (%):

commercial _____%

T-made _____%

S-made _____%

Observations

Observer watches class for five minutes, then marks each item that occurred at least once in that period. Repeat procedure until six five-minute periods have been observed and the items checked off.

General organization, Topics, Activities

1	2	3	4	5	6		T
						1. Language arts / English	
						2. Spelling	
						3. Handwriting	
						4. Structured writing	
						5. Creative writing	
						6. Reading practice	
						7. Reading	
						8. Math	
						9. Science	
						10. Social studies	
						11. Health / Safety	
						12. Art	
						13. Music	
						14. Games (entertainment)	
						15. Games (educational)	
						16. Problem solving / Logic	
						17. Projects / experiments	
						18. Self or S administered test	
						19. T administered test	
						20. Meeting	

						21. All same group activity	
						22. All same individual activity	
						23. 2 or more diff. simultaneous group activities	
						24. 2 or more diff. simultaneous indiv. activities	
						25. Simultaneous indiv. and group activities	
						26. Disruptive activity shift	
						27. Smooth activity shift	

						28. Textbooks in use	
						29. Audio-Visual Equipment in use	
						30. Commercial materials in use	
						31. T-made materials in use	
						32. S-made materials in use	

T activities

						33. T interacting with total class	
						34. T talking to total class (no interact.)	
						35. T interacting with subgroup	
						36. T talking to subgroup (no interact.)	
						37. T interacting with 1 student	
						38. T talking to 1 S (no interact.)	

(2)

1	2	3	4	5	6		T
						39. T talking with adult	
						40. T working at desk or table (alone)	
						41. T reading aloud	

						42. T starts or shifts class task/activity	
						43. T starts/shifts group task/activity	
						44. T starts/shifts individ. S task/activity	
						45. T gives S(s) choice of activities	
						46. T ends activity	

						47. T discusses/demonstrates use of equipment, material	
						48. T tells implications or consequences of something	
						49. T elicits implications or consequences of something	
						50. T amplifies or explains S comment	
						51. T gives incomplete answer	
						52. T gives complete answer	
						53. T asks S to answer own or other S's question	
						54. T gives directions	
						55. T orders, commands	
						56. T suggests, guides	

						57. T gives unrequested help	
						58. T gives requested help	
						59. T turns help request back to requester or other S	
						60. T asks for clarification	
						61. T asks class a question	
						62. T asks group a question	
						63. T asks individual a question	
						64. T asks convergent question (1 answer) academic	
						65. T asks divergent question (many answers) academic	
						66. T answers own question	

						67. T accepts S(s) idea	
						68. T ignores, rejects S idea (no explanation)	
						69. T disagrees with S idea (with explanation)	
						70. T mentions tests/relative performance	
						71. T organizing/orienting	
						72. T supervising/watching	
						73. T walks among Ss	
						74. T plans with Ss	
						75. T calls on S (after offer)	
						76. T calls on S (after no offer)	

						77. T listens attentively to S	
						78. T invokes/announces classroom/discipline rule	
						79. T discusses discipline with Ss	
						80. T mentions subject rule	
						81. T distracts S(s) from disruptive activity	
						82. T warns	
						83. T criticizes behavior	
						84. T scolds	
						85. T shouts	
						86. T punishes	

(3)

1	2	3	4	5	6		T
						87. T uses firm tone	
						88. T uses sharp tone	
						89. T praises/approves behavior	
						90. T praises S work or comments	
						91. T criticizes S work or comments	

						92. T talks about S(s) work	
						93. T gives feedback	
						94. T prods	
						95. T encourages elaboration of idea or activity	
						96. T encourages S expression	
						97. T uses sarcasm	
						98. T shows annoyance	
						99. T shows anger	
						100. T smiles	
						101. T touches/hugs S	
						102. T socializes with S(s)	

						103. T ranges from topic	
						104. T encourages ranging from topic	
						105. T discourages ranging from topic	
						106. T participates in S activity (not 'teaching')	
						107. T drills Ss (rote, repetitive work)	
						108. T gives factual material	
						109. T tells personal opinion, experiences, likes	
						110. T gives speculative, hypothetical material	
						111. T speech totally inaudible most of the time	

S activities

						112. S(s) work on the floor	
						113. 5 or more Ss move purposefully	
						114. 3 or more Ss move around aimlessly	
						115. 5 or more Ss fidgeting	
						116. 2 or more Ss apparently daydreaming	
						117. S(s) shouting	
						118. S(s) horseplay	
						119. Ss argue	
						120. S(s) tries to stop other's disruptive behavior	

						121. 5 or more Ss smile	
						122. S frowns, cries	
						123. S(s) talk about non-class topic	
						124. S expresses annoyance	
						125. S competes with S	
						126. Ss work together	
						127. S helps (teaches) S	
						128. Ss share, cooperate	
						129. S praises S (approves)	
						130. S criticizes S (disapproves)	
						131. S teases S(s) (friendly)	
						132. S teases S(s) (unfriendly)	
						132a. S-S discussion (academic)	

(4)

1	2	3	4	5	6		T
						133. S seeks feedback, evaluation	
						134. S gives feedback, evaluation	
						135. S asks for directions or help	
						136. S seeks attention of T	
						137. S - T discussion of work	
						138. S starts or shifts activity on own	
						139. group starts or shifts activity on own	
						140. S asks permission	
						141. S gets or replaces materials, equipment on own	

						142. Ss form own work group	
						143. S complies with T request or demand	
						144. S ignores or rejects T request or demand	
						145. S offers response (raises hand)	
						146. S gives solicited question or comment	
						147. S raises a question, or comments (unsolicited)	
						148. S answers T question	
						149. S answers S's question	
						150. S gives factual material	
						151. S gives opinions, experiences, likes	
						152. S gives speculative, hypothetical material	

						153. S experiments with material, equipment	
						154. S builds on T comment	
						155. S builds on S's comment	
						156. S waits	
						157. S listens, watches	
						158. ½ class or more working intently with T attention	
						159. ½ class or more working intently without T attention	
						160. 5 or more Ss paying attention to T	
						161. 2 or more Ss not paying attention to T (when expected)	

(5)

Classroom Atmosphere Ratings

These are to be made at the end of each classroom observation visit, and refer to impressions derived from the total visit. Try to make each rating independently of all the others; don't think about consistency, either among the items in this section, or between these ratings and the classroom observation items. Circle one number for each item.

S Ratings

1.	S work self-sustaining	1	2	3	4	5	6	S work teacher-dependent
2.	Ss never worked on convergent tasks	1	2	3	4	5	6	Ss worked on convergent tasks most of the time
3.	Ss never worked on divergent tasks	1	2	3	4	5	6	Ss worked on divergent tasks most of the time
4.	Ss moved very much	1	2	3	4	5	6	Ss moved very little
5.	Ss had no voice in planning class activities	1	2	3	4	5	6	Ss totally responsible for planning class activities
6.	Ss seemed bored	1	2	3	4	5	6	Ss seemed extremely interested
7.	Ss always followed their own interests	1	2	3	4	5	6	Ss always followed a prescribed plan
8.	Ss talked very freely	1	2	3	4	5	6	Ss talked only at T direction
9.	Single common activities	1	2	3	4	5	6	Varied simultaneous activities
10.	Ss showed much initiative	1	2	3	4	5	6	Ss showed no initiative
11.	Ss were compliant	1	2	3	4	5	6	Ss were independent
12.	Each S always worked at own pace	1	2	3	4	5	6	Common pace aimed at
13.	Ss were active (productive)	1	2	3	4	5	6	Ss were passive (receiving)
14.	Ss had no alternatives	1	2	3	4	5	6	Ss constantly making choices
15.	Ss mostly uninvolved in class activities	1	2	3	4	5	6	Ss highly involved in class activities
16.	Ss appeared unhappy	1	2	3	4	5	6	Ss appeared happy

Class rating items

17.	Creative	1	2	3	4	5	6	Uncreative
18.	Tense	1	2	3	4	5	6	Relaxed
19.	Rushed	1	2	3	4	5	6	Leisurely
20.	Ss all used same materials or books at same time	1	2	3	4	5	6	Diverse materials or books in use at same time
21.	Accepting	1	2	3	4	5	6	Rejecting
22.	Minimally task-oriented	1	2	3	4	5	6	Extremely task-oriented
23.	Minimally person-oriented	1	2	3	4	5	6	Extremely person-oriented
24.	Never cooperative	1	2	3	4	5	6	Very frequently cooperative
25.	Never competitive	1	2	3	4	5	6	Frequently competitive
26.	Not at all business-like	1	2	3	4	5	6	Extremely business-like
27.	Friendly	1	2	3	4	5	6	Hostile
28.	Not at all carefree	1	2	3	4	5	6	Extremely carefree, jovial
29.	No rules in evidence	1	2	3	4	5	6	Many rules in evidence
30.	Quiet	1	2	3	4	5	6	Extremely noisy
31.	Relatively devoid of stimuli	1	2	3	4	5	6	Full of stimuli
32.	Repetitive	1	2	3	4	5	6	Extremely varied
33.	Calm	1	2	3	4	5	6	Excited
34.	Orderly	1	2	3	4	5	6	Unruly
35.	Rigid regarding procedures	1	2	3	4	5	6	Extremely flexible regarding procedures
36.	Random sequence of activities	1	2	3	4	5	6	Orderly sequence of activities
37.	Behavior was not at all spontaneous	1	2	3	4	5	6	Behavior was extremely spontaneous
38.	Untidy	1	2	3	4	5	6	Very tidy
39.	Oriented to novel, unusual	1	2	3	4	5	6	Not oriented to novel, unusual

T ratings:

☐ 1 main T only -- circle the appropriate number

☐ 2 or more team Ts -- circle number which represents an average of their behavior

☐ main T(s) and special T -- circle rating for main (team), underline rating for specialist and indicate specialty (music, art, etc.)

40.	T very energetic	1	2	3	4	5	6	T unenergetic
41.	T dry	1	2	3	4	5	6	T flamboyant, dramatic
42.	T emphasized memory, rote	1	2	3	4	5	6	T emphasized comprehension, analysis
43.	T mostly critical (negative)	1	2	3	4	5	6	T mostly praising
44.	T not at all punitive	1	2	3	4	5	6	T punitive
45.	T spoke very rapidly	1	2	3	4	5	6	T spoke very slowly
46.	T not at all warm	1	2	3	4	5	6	T very warm
47.	T frequently used ridicule, sarcasm	1	2	3	4	5	6	T never used ridicule, sarcasm
48.	T frequently consulted with individuals or small groups	1	2	3	4	5	6	T never consulted with individuals or small groups
9.	T frequently gave individual attention	1	2	3	4	5	6	T never gave individual attention
0.	T encouraged exploration	1	2	3	4	5	6	T discouraged exploration
1.	T protective, sheltering	1	2	3	4	5	6	T not protective
2.	T appeared uncomfortable	1	2	3	4	5	6	T appeared extremely comfortable, confident
3.	T spoke extremely clearly, coherently	1	2	3	4	5	6	T was vague, unclear, incoherent
4.	T not at all permissive	1	2	3	4	5	6	T highly permissive
5.	T unenthusiastic	1	2	3	4	5	6	T highly enthusiastic
6.	T sensitive to Ss	1	2	3	4	5	6	T insensitive to Ss

57.	T seldom exercised direct control	1	2	3	4	5	6	T almost always exercised direct control
58.	T seldom controlled indirectly	1	2	3	4	5	6	T often controlled indirectly
59.	T mostly lectured	1	2	3	4	5	6	T never lectured
60.	T often gave direct and immediate feedback	1	2	3	4	5	6	T seldom gave direct and immediate feedback
61.	T often used humor	1	2	3	4	5	6	T never used humor
62.	T seldom laughed	1	2	3	4	5	6	T often laughed
63.	T promoted S independence, autonomy	1	2	3	4	5	6	T discouraged S independence, autonomy
64.	T discouraged open S expressiveness	1	2	3	4	5	6	T encouraged open S expressiveness
65.	T actively sought and accepted procedural suggestions	1	2	3	4	5	6	T neither sought nor accepted procedural suggestions
66.	T gestured very little	1	2	3	4	5	6	T gestured constantly
67.	T voice varied, expressive	1	2	3	4	5	6	T voice monotone
68.	T accepted broad range of behavior	1	2	3	4	5	6	T accepted narrow range of behavior
69.	T gave more attention to boys	1	2	3	4	5	6	T gave more attention to girls
70.	T impatient	1	2	3	4	5	6	T very patient

Additional comments

Please make notes in space below about any unusual or interesting occurrences during the visit; or any aspects of the class which you feel are worth mentioning and were not reflected in the observations or ratings.

OBSERVERS' MANUAL

Observation Visits - General Instructions

The categories and ratings have been defined in the manual so that all Os will be watching for and recording the same aspects of behavior in terms of the same criteria. If an O relies on personal interpretation of each item without reference to how it has been defined, the reliability of the item will be decreased. The manual should be studied carefully and frequently (at least once a week during observations). Even after you feel very familiar with all the items, it is easy to gradually develop your own definitions which may differ to some degree from those in the manual. Only continual review of the definitions can avoid this. The manual should not be taken into the classrooms.

Items that do not seem to be clearly defined in the manual can be discussed before a further visit by phoning Dan Solomon or Art Kendall, 279-3633.

The Observation Visit

On arriving at a school, the O should go to the office and explain that the T (name) is taking part in a research project directed by Dr. Solomon, and that T is expecting O at (time). If T is absent or if the observation cannot take place, O should try to set up another visit at the same time of day and contact D. Solomon or A. Kendall as soon as possible (in fact, it would be best to check back with us before you leave the school, to avoid conflicts, etc.). An office person will generally accompany O to the classroom, and introduce O to the T. If possible, O should ask where it will be convenient to sit during the observation and ask for permission to move around the room. If it would be difficult to interrupt the class, T sometimes simply waves the O into the room, and the O should then find a place where observations can be made unobtrusively. The O will generally be able to move around freely in a classroom where there are a number of activities going on. If the T is in front of the class with everyone's attention focused there, a seat at the side of the class, where both T and Ss' reactions can be seen, is advised. O should spend a few minutes in the class before starting the first observation period.

Os should initiate no contacts with children, should respond in a minimal but friendly fashion to children's advances, and gently but definitely cover the observation form when children (or adults) approach. Questions from Ts and Ss can usually be satisfied with a short answer; for example:

Child:	What are you doing?
O:	I'm watching what happens in your class; or, just watching.
Child:	What are you writing down?
O:	I'm writing down things that happen in your class.
T:	Let me see what sort of thing you're looking for.
O:	It's probably better if you don't, because it might influence what you and your class do.

After the six observations have been completed, if it seems that it might be helpful and not inconvenient, O can stay in classroom a further 10 minutes to observe for general aspects of classroom atmosphere before filling out the ratings section.

(2)

Observation Booklet - General Instructions

The observation booklet should be filled out in this order:

1. Classroom characteristics - Section A
2. Observations
3. Classroom atmosphere ratings
4. Classroom characteristics - Section B

Filling out classroom characteristics (Section A) before beginning observations gives the children time to get used to (and hopefully forget) the O, so that class procedures and atmosphere observed are as "normal" as possible by the time the first observation begins. Classroom characteristics (Section B) will be easier to fill out at the end of the observations when the classroom has become more familiar.

If the children move from their own classroom --to the music room, or to another room to watch TV, etc.-- the O should go with them. If the move comes in the middle of a 5-minute observation period, that observation should be discounted and a new observation begun in the new room.

Observation Technique

O watches class for exactly 5 minutes (use stopwatch) then marks each item that occurred at least once in the period. Each column on the form represents one 5-minute observation period. Thus all categories occurring during the first observation period are marked in Column 1, all those occurring in the second observation period are marked in Column 2, and so on. Procedure is repeated so that six 5-minute periods are tallied altogether. Total number of times an item has been checked can be entered at the end of (or after) the visit, when ratings and classroom characteristics have been completed.

> NB. Only one check mark is required for each behavior observed in any one time period, even if that behavior is repeated; e.g., if T is giving directions (Item 55) on two separate occasions in time period 1, do not check Columns 1 and 2 -- only Column 1, and put only one mark in Column 1.

See following pages (Observation Form Category Definitions) for definitions of all items to be observed and for procedures when there is more than one T present.

Classroom Characteristics - Guidelines
(Cover Sheet Definitions)

Fill out Section A before beginning observations, and Section B at the end of the visit. Circle appropriate number and fill in blanks.

Combined schoolrooms - Doesn't refer to combined grades in one room but to combined rooms which could become two or more single classrooms.

Open area - Space which can/does contain more than one class and which could not be made into separate classrooms.

Crowdedness - One's impression from looking around the class.

Rows - Refers to traditional lined-up, front-to-back arrangement.

Background noise - Independent of the presence of acoustic tiling, how much background noise is evident? (Include noise from other classes, from heating system, from pipes, from outside; not noise from in-class activities, talking, etc.)

Carpet - Means wall-to-wall carpeting.

Room-size rug - 9 ft. x 12 ft., etc.

Small rug - Small enough to be carried around by the children, e.g., scatter rug.

Interest center - An area where children can work independently on a special project, or where a group of objects related to a particular topic are displayed and ideas are suggested for projects, with appropriate material or equipment; must be more than signs, posters, or pictures. There must be provision for children to do work on the topic--thematically-oriented work spot.

Amount of equipment visible and accessible - includes microscopes, globe, games, record player, TV, projector, etc.

Little, some, and much - These are relative to the classes you have seen. Think about what you have seen during the questionnaire administration visits and make these judgments according to these ranges. (This applies to the other judgments of amounts also)

Material - Includes books, papers, paints, glue, etc.

Observation Form Category Definitions

General organization, topics, and activities

In this section categories should not be considered to be mutually exclusive: topics such as drugs, ecology, etc., may be included under various categories, depending on the approach taken; and categories should be checked if any S is engaged in the activity.

1. Language arts/English - grammar, sentence structure, word usage, vocabulary, speech. (Distinguish from No. 2, spelling; Nos. 4 and 5, structured or creative writing; and No. 6, reading practice.)
2. Spelling - written or verbal; phonics.
3. Handwriting - practicing printing letters or writing in script, penmanship, pattern exercises. (Distinguish from Nos. 4 and 5, structured or creative writing.)
4. Structured writing - includes copying, workbooks, reports, and anything that does not involve much use of imagination.
5. Creative writing - writing that involves use of imagination; may or may not be on an assigned topic.
6. Reading practice - reading practice or reading techniques rather than reading for information; e.g., SRA reading kits, etc.
7. Reading (other) - any reading for information, pleasure, etc.
8. Math - includes math problems, exercises, doing math worksheets.
9. Science - discussion of physics, chemistry, biology, the environment, nature, ecology, astronomy, etc. (Distinguish from No. 11, health.)
10. Social studies - history, geography, group relations, current events, government, etc.
11. Health/safety - discussion of hygiene, physical fitness, drugs; bicycle rules, pedestrian rules, traffic regulations, Officer Friendly programs, etc.
12. Art - finger painting, papier mâché drawing, sculpture, crayons, tracing, cutting, use of colored paper, clay, etc.
13. Music - singing, playing musical instruments, listening to records, tapes.
14. Games (entertainment) - played simply for fun; no discernible educational objective.
15. Games (educational) - includes word games, math games, problem-solving games, etc. If there is a clear educational goal, check this category.
16. Problem-solving/logic - finding solutions through a series of steps; puzzles, etc.

(5)

17. Projects/experiments - A project is a comprehensive or long-term activity with a visible product; e.g., raising plants and keeping a record of observations, making a booklet about a State, etc. Include experiments in science, social sciences, etc. (Art projects are included in No. 12, Art.)

18. Self (or S)-administered test - includes tests in workbooks, etc. -- students testing each other. Results may or may not be recorded.

19. Teacher-administered test - verbal or written. Results may or may not be recorded.

20. Meeting - talking about class business, planning future activities, voting, etc.

NOTE: The term "activity" in following sections refers not only to topic or subject, but to mode of physical behavior; e.g., reading, listening, watching, painting, etc.

21. All same group activity - Virtually all students working on the same task, involving interaction; can be total class or subgroups; e.g., games, spelling bees, group discussions/projects.

22. All same individual activity - all students working on the same task individually; e.g., all students taking a test, or all working in math workbooks. Include all students reading, even if each is reading a different book. A few students daydreaming, etc., does not preclude this item.

23. Two or more different simultaneous group activities.

24. Two or more different simultaneous individual activities.

25. Simultaneous individual and group activities.

26. Disruptive activity shift - A change by class or group from one physical activity to another characterized by excessive noise, clowning around, irrelevant activity, etc. Not necessarily a subject change. An example of a change is going from Ss listening to T explaining how to do something to Ss doing it.

27. Smooth activity shift - a non-disruptive change by the group or class from one physical activity to another.

28. Textbooks in use - being used and not simply visible.

29. Audio-visual equipment in use (example: TV, tape recorder, phonographs, cameras, projectors of all kinds, reading pacers, etc.)

30. Commercial materials in use - include experiment kits, flash cards, cuisinaire rods. Does not include art supplies, pencils,

pens, paper, chalk, blackboards, etc.

31. Teacher-made materials in use - e.g., dittoed sheets, charts, folders, maps, etc.

32. Student-made materials in use - being used and not being made or simply being displayed; e.g., books written by Ss being read by other Ss, S-made art smocks, pencil boxes, puzzles, etc.

Teacher activities

NOTE: In this section, when more than one T is present, note all behavior by all Ts. Also, T verbal categories apply even if only one S is involved -- unless group is specified or implied in category.
"Interacting with" - more than minimal input from Ss.

"Talking to" -Predominantly one-way communication.

33. T interacting with total class - discussion with class as a unit; give-and-take.

34. T talking to total class - no interaction

35. T interacting with subgroup

36. T talking to subgroup - no interaction

37. T interacting with one student - relating on a one-to-one basis. (Distinguish from No. 63, asks individual a question).

38. T talking to one student - no interaction

39. T talking with adult - T speaking with another T, parent, etc.

40. T working at desk or table (alone) - no interaction

41. T reading aloud - to class or subgroup

42. T starts or shifts whole class task or activity

43. T starts or shifts group task or activity

44. T starts or shifts individual S task or activity

45. T gives Ss choice of activities - for immediate work or for future activity.

46. T ends activity (S, group, or class)

47. T discusses/demonstrates use of equipment, material - e.g., audio-visual aids, workbooks, educationalgames, etc.

(7)

48. T tells implications or consequences of something - some statement of form "if x, then y."; e.g., include school subjects, behavior, etc.; e.g., effect of climate on plant life; what happens if people are not considerate of each other, etc.

49. T elicits implications or consequences of something - T tries to get Ss to state what implications or consequences would be.

50. T amplifies or explains S's comment - enlarges on what S has said; e.g., uses S comment or contribution as starting point of discussion.

51. T gives incomplete answer - giving a partial, incomplete answer; a beginning or "clue" as opposed to a full answer.

52. T gives complete answer - distinguish from No. 51, incomplete or partial answer.

53. T asks S to answer own or other S's question - turns question back to S or to other S, or to the whole class.

54. T gives directions - How to do something

55. T orders, commands - imperative to do something; student has no option not to do it.

56. T suggests, guides - T encourages but does not insist that S do something.

57. T gives unrequested help - T aids S who did not explicity ask for help.

58. T gives requested help - T aids a S following a clear and explicit request for help.

59. T turns help request back to requester or other S -

60. T asks for clarification - T asks for a more understandable restatement.

61. T asks class a question - No specific respondent indicated; seeks offer of response(s).

62. T asks group a question - same as No. 61, except addresses question to a subgroup.

63. T asks individual a question - specific respondent indicated even if class is involved in the situation.

64. T asks convergent question (one answer) academic - T asks S(s) to answer question which has only one answer or a limited set of correct answers; e.g., how much is 9 x 12? What is the capital of France? What happens if you mix vinegar and baking soda?

65. T asks divergent question (many answers) academic - T asks S(s) to answer question which has multiple acceptable answers; e.g.:

What would happen if people had no thumbs? What would happen if we had no clocks? What kinds of things would happen if rubber turned to wood? How many ways can you use a brick?, etc.

66. T answers own question - when no S supplies the required answer.

67. T accepts Ss' ideas - i.e., does not ignore or reject; praises idea or elaborates on it to show that it's worthwhile; e.g., suggests things that can be done to follow it up.

68. T ignores, rejects S idea (no explanation) - disagrees with, rejects S idea without explanation; includes ignoring S idea (if T has noticed it).

69. T disagrees with S idea (with explanation) - follows disagreement with reason(s)for disagreeing.

70. T mentions tests/relative performance - mentions tests, scores, grades, or relative performance of different students --anything that refers to competitive standards.

71. T organizing, orienting - T prepares Ss for work, task sections, or tasks to come; e.g., plans for the day, changes in seating, choosing Ss for particular tasks, etc.

72. T supervising/watching - Ss occupied; T giving close attention to ongoing activity; involves occasional interaction.

73. T walks among Ss

74. T plans with Ss - T and S(s) together decide on the details of a project, the day's schedule, or future activities, etc.

75. T calls on S (after offer)

76. T calls on S (after no offer)

77. T listens attentively to S - pays close attention to S and tries to understand S. When T is being observed from a distance, facial expression, etc., will indicate careful listening. This excludes listening to brief responses, simple requests.

78. T invokes or announces classroom or discipline rule - T either creates a new rule or refers to a rule previously decided upon, e.g., "You know you are not supposed to do that.", "No more gum-chewing in class."

79. T discusses discipline with Ss - discusses discipline issues and problems, S comportment, noise, etc.

80. T mentions subject rule - e.g., "i before e, except after c"; "opposite poles of magnets attract", etc.

81. T distracts S(s) from disruptive activity - Intervenes without scolding or criticism, etc., and directs S(s) to other activity.

82. T warns - T mentions a way of avoiding future negative consequences; e.g., "Be quiet or you will miss recess."

83. Criticizes behavior - tells S(s) their behavior is inappropriate, or annoying, etc. (Distinguish from #91, criticizes work.)

84. Scolds - extended criticism, with harsh tone.

85. Shouts - T raises voice to Ss.

86. T punishes - e.g., withdrawing a privilege.

87. T uses firm tone (in discipline situation) - The T is quietly and firmly insistent.

88. T uses sharp tone (in discipline situation) - If the quality of T's voice is harsh or assumes an edge or a rasping quality, then this item should be checked.

89. T praises/approves behavior - not work.

90. T praises S's work or comments

91. T criticizes S's work or comments - tells S that work is wrong or bad, etc.

92. T talks about S's work - T discusses past or ongoing work or task with individual S or group; planning, giving advice. (Distinguish from #91, criticizing.)

93. T gives feedback - gives S(s) information about the correctness of S(s) work or comment. May refer to any aspect of S(s) work: approach or outcome. Feedback does not exclude praise or ctiticism.

94. T prods - presses S for an answer, or for greater effort.

95. T encourages elaboration of idea or activity - includes suggesting and/or reinforcing elaboration of an activity or idea; e.g., if animals are being raised, T encourages Ss to discover which geographical areas they come from, their place in the ecological balance; encourages weighing them for math, etc.

96. T encourages S expression - e.g., T encouraged Ss to talk freely, to follow own trend of thought, to express emotion. Can include encouraging free discussion among groups of Ss.

97. T uses sarcasm - partially disguised, negative comments; e.g., "A smart person like you should be able to solve that."

98. T shows annoyance - It is noticeable that T is moderately irritated by the Ss' behavior, etc.

99. T shows anger - a more intense state of irritation than "annoyance" (#98). Any one act may show either anger or annoyance, but not both. Both kinds of acts may occur in same 5-minute period.

100. T smiles

101. T touches/hugs - pats, puts arm around shoulders, tousles hair, etc.

102. T socializes with S(s) - T talking about any non-academic matters with S(s) (not adults).

103. T ranges from topic - T goes off in various directions while talking to Ss - may, or may not, seem relevant.

104. T encourages ranging from topic - includes positive response to S(s) ranging from topic, as well as promoting ranging.

105. T discourages ranging from topic - when S starts to range from topic, T inhibits it by ignoring it or by reacting negatively to it.

106. T participates in S activity (not "teaching") - T participates on equal basis with Ss or takes same roles as Ss in some activity.

107. T drills Ss (rote, repetitive work) - e.g., multiplication tables, history dates.

108. T gives factual material - anything T presents as factual, e.g., 7x10 = 70; names of states, spelling, science laws. Exclude things clearly labelled as speculative, theoretical, hypothetical, or opinion.

109. T tells personal opinion, experiences, likes - T labels comments as opinions by saying: "I feel..," "I think..," "In my opinion..." (distinguish from #110).

110. T gives speculative, hypothetical material - things clearly labelled as such, e.g., "It might be that..." (distinguish from #109)

111. T's speech totally inaudible most of the time - should be checked when O is unable to check T verbal categories because of inability to hear T. This refers to whole observation time unit, not simply to one or two instances during the period.

Students' Activities

112. S(s) work on the floor - does not include sitting on the floor to watch something (film, TV) or to listen to a story, etc.

113. 5 or more Ss move purposefully - e.g., Ss get up for paper or to sharpen pencils. Ss walk directly toward some goal.

114. 3 or more Ss move around aimlessly - Ss wander from place to place with no apparent goal.

115. 5 or more Ss fidgeting

116. 2 or more Ss apparently daydreaming - e.g., vacant expression, gazing out of window, etc.

117. S(s) shouting

118. S(s) horseplay - any rough or boisterous play by Ss. (Distinguish from #119, arguing.)

119. Ss argue - vocal disagreement between 2 or more Ss which may range from bickering to anger.

120. S(s) tries to stop other's disruptive behavior -- e.g., S asks other S to be quiet. Do not take into account the success of the attempt.

121. 5 or more Ss smile

122. S frowns, cries

123. S(s) talk about nonclass topic - S talks with T or another S about topic not related to schoolwork.

124. S expresses annoyance - should be more than minimal irritation - a clear expression of annoyance. May only involve 1 S, and may or may not be part of an argument, #119.

125. S competes with S - Any case where 1 S seems to be trying to do better than other S(s), e.g., racing; trying to see who can finish first or get more right, etc.; comparing work for relative quality.

126. Ss work together - relatively equal roles (Distinguish from #127)

127. S helps (teaches) S - not just Ss working together (relatively unequal roles); include giving directions.

128. Ss share, cooperate - May be distinguished from #125, working together, since it is possible to share and yet not be working together. (Distinguish from #127, helping/teaching.)

129. S praises S (approves) - includes comments on work or person, e.g., "Hey, that's neat!", "You're OK."

130. S criticizes S (disapproves) - includes comments on work or person, e.g., "You're dumb!", "That's a lousy job."

131. S teases S(s) (friendly) - distinguish from #132.

132. S teases S(s) (unfriendly) - S picks on other S; includes bullying. The unfriendly intent must be obvious for this item to be checked.

132a. S-S discussion (academic) - A discussion concerning school- or task-related topic by two or more students (without direct teacher involvement.)

133. S seeks feedback, evaluation - not just of produced work, but also of ideas, approach, etc.; includes seeking feedback from T or other Ss, e.g., "Is this the right way to do it?", "How's this?"

134. S gives feedback, evaluation

135. S asks for directions or help - may ask other S or T. (Distinguish from #133, request for feedback.)

136. S seeks attention of T - does not include raising hand to offer response #145.

137. S-T discussion of work - any discussion of classwork between T and 1 or more Ss; can refer to a specific item of work, or to work in general.

138. S starts or shifts task or activity on own.

139. Group starts or shifts task or activity on own.

140. S asks permission.

141. S gets or replaces materials, equipment on own.

142. Ss form own work group -- Ss decide with whom they want to work, or just get together to work.

143. S complies with T request or demand.

144. S ignores or rejects T request or demand - S resists or disobeys T (or doesn't respond to T).

145. S offers response (raises hand) - T asks question of class and S raises hand, etc., to answer question.

146. S gives solicited question or comment - S gives question or comment after T has requested same (either from class or individual S).

147. S raises a question, or comments (unsolicited) - not preceded by T request for same.

148. S answers T question.

149. S answers S's question.

150. S gives factual material - see #108.

151. S gives opinions, experiences, likes - see #109.

152. S gives speculative, hypothetical material - see #110.

153. S experiments with material, equipment - playing around, trying different approaches or combinations to see effects; includes art, scientific equipment or material, machinery, etc.

154. S builds on T's comment - S elaborates on something T has said.

155. S builds on S's comment - S elaborates on something other S has said.

156. S waits - e.g., S has finished something and waits for T or other Ss before doing something else; or S waits for start of activity.

157. S listens, watches - listens to T or other S; watches what is going on in the classroom, etc.

158. ½ class or more working intently, with T attention

159. ½ class or more working intently, without T attention

160. 5 or more Ss paying attention to T

161. 2 or more Ss not paying attention to T (when expected)

Classroom Atmosphere Rating Definitions

General comments - These ratings are to be made at the end of each classroom observation visit, and they refer to impressions derived from the total visit. Try to make each rating independently of all the others; don't think about consistency, either among the rating items, or between the ratings and the classroom observation items. The ratings refer to what occurred during your visit only --what you observed. Don't try to make inferences about what you think is probably typically or generally true --only what was there on this occasion.

In instances when more than one teacher was present for all or most of the observation period, adjustments need to be made for those ratings which refer to teacher behavior (Nos. 40-70). If there are two (or more) teachers with equally central roles, make teacher ratings which represent your best judgment of an average of their behavior. If there is a primary teacher and a special teacher present (e.g., music, art, visiting poet), or an assistant, use circled numbers to represent the primary teacher and underlined numbers to represent the specialist or assistant (and write notes about the secondary role in the margin). If parent volunteers are present, note their presence but do not rate their behavior.

The following descriptions generally define the two extreme poles of each scale. The ratings used, 1 to 6, should represent the degree to which the students, teacher, or class approached either of the poles, as defined.

When you have finished the ratings, please make notes about any unusual or interesting occurrences during the visit; or, any aspects of the class which you feel are worth mentioning. Any indications of differential behavior toward different subgroups of children, overt or latent themes conveyed by the class activities and teacher comments, teacher and student reactions to unusual occurrences, and any general impressions you have which you feel are not represented by the observations or ratings you have made should be mentioned.

Student Rating Items

1. S work self-sustaining----------S work teacher-dependent
   If Ss worked by themselves, without the aid of a T; if they went from task-to-task on their own (or step-to-step within a task), then the Ss work was "self-sustaining" (score 1). If Ss worked only under direct supervision of the T; or Ss constantly went to the T for direction, etc.; or if the T initiated all new tasks, then the Ss' work was "teacher-dependent (score 6).

2. Ss never worked on convergent tasks---------Ss worked on convergent tasks most of the time
   Convergent tasks are those for which there is a single correct answer or a distinctly limited number of correct answers or outcomes; e.g., puzzles, math problems, spelling, grammar exercises.

3. Ss never worked on divergent tasks-----Ss worked on divergent tasks most of the time

Divergent tasks are those for which there are multiple acceptable or appropriate approaches or outcomes; e.g., imaginative work in general, including use of fantasy, making up plays or stories, art work, hypothetical discussions, or speculation.

4. Ss moved very much----------------Ss moved very little

If the Ss moved freely and frequently; e.g., to get supplies, discuss a project, talk to the T, fool around, etc., then they can be scored at the "very much" end of the scale (1). If Ss sat in their places most of the time, if the T or an assistant brought work to the Ss, etc., score at the "very little" end of the scale (6).

5. Ss had no voice in planning class activities -------------- Ss totally responsible for planning class activities

If the T made all plans and decisions for the Ss, and gave the Ss no chance to alter these plans or decisions, then score 1. If the Ss made all decisions and planned everything they did, and if the T let Ss carry out their wishes, score 6.

6. Ss seemed bored--------------Ss seemed extremely interested

If it seemed that Ss were not interested in what they were doing; if they were often distracted from their tasks; if they seemed vacant, lethargic, or unusually restless; score 1. If the Ss appeared to be absorbed in and enjoying what they were doing; if their full attention was on the task they were doing (including listening and watching tasks, etc.); then score 6.

7. Ss always followed their own interests-------Ss always followed a prescribed plan

If the Ss did whatever they wanted to whenever they wanted to, and always appeared to be doing what interested them, score 1. If the plan for the S had been already decided upon or prearranged and the Ss followed this plan, whether they seemed interested in it or not, score 6.

8. Ss talked very freely----------Ss talked only at T direction

Refers to degree to which S speech was, at one extreme, open and spontaneous, or, at the other extreme, heard only following T's permission to speak.

9. Single common activities----------Varied simultaneous activities

If all Ss worked at the same task(s) at the same time, score 1. If many different activities were typically going on at the same time (whether by S choice or not), score 6.

10. Ss showed much initiative--------------Ss showed no initiative

If Ss decided on and started new tasks on their own, and took responsibility to do things without waiting to be told, score 1. If they waited for the T's permission to start a new task, or if they had to be told explicitly what to do next, score 6.

11. Ss were compliant------------------------Ss were independent

Ss were "compliant" if they did as they were told without question; also if they generally went along with general consensus on issues. If Ss decided for themselves their own attitudes, opiniions or plans, neither conforming with nor rebelling against T's wishes, score 6.

12. Each S always worked at own pace---------Common pace aimed at

If Ss started and finished tasks at different times, or if they worked on different levels of material at the same time, score 1. If Ss generally did the same work during the same time period, with common starting and ending times; were on only one unit at a time; if fast workers were required to wait for the slow ones before going on to the next unit, score 6.

13. Ss were active (productive)-------------Ss were passive (receiving)
Refers to the degree to which Ss' predominant mode of activitiy was productive, including talking, creating, doing (active), as opposed to receptive, including listening, watching, reading. Generally, the distinction is between receiving information and producing or creating.

14. Ss had no alternatives--------Ss constantly making choices If Ss didn't decide what to do or when to do it, were simply given and expected to follow directions, score 1. If Ss chose their tasks from many possibilities, and decided for themselves how and when each task was to be done, then score 6.

15. Ss mostly uninvolved in class activities ------Ss highly involved in class activities
If Ss seem bored, passive, uninterested, indifferent, score 1. If Ss appear to be strongly motivated to do what they are doing, if they seem extremely interested, absorbed, engaged, etc., and take an active role in class activities, score 6.

16. Ss appeared unhappy-------------Ss appeared happy
Indicated by, on the one hand, much frowning and/or grumbling, Ss seeming dissatisfied with what they are doing, a lack of enjoyment, and a generally depressed atmosphere; or, on the other hand, by smiling faces and a general high level of warmth, amiability, and enjoyment.

Class Rating Items

17. Creative----------------Uncreative

If the class tried new ways of using materials, or tried new approaches and unusual methods in exploring many topics, score 1. If all subjects were approached in the same standardized way, with no variety in methods or materials, score 6.

18. Tense-------------Relaxed
If Ss and T appeared nervous, anxious, or afraid; if there were frequent misunderstandings, frustration, eruptions of annoyance, score 1. If T and Ss were not guarded or abrupt with one another; if all seemed to enjoy working together; if there were few hostile arguments, general ease of relationships, and little friction, score 6.

19. Rushed----------Leisurely
The degree to which Ss were continually being hurried to get things done,

to meet schedules, etc., or were allowed to take the time they needed with no time pressures and no pushing.

20. Ss all used same materials or books at same time---Diverse materials or books in use at same time
If all Ss were using same textbook, or painting with same type of materials, etc., score 1; if the Ss used different materials, and if a number of different books, reference works, magazines, etc., were in simultaneous use, score 6.

21. Accepting------------------------------------Rejecting
If there was a good rapport between T and Ss and among Ss, and a general tolerance for, and interest in, idiosyncracies, diverse viewpoints, and behavior, score 1. If the tone was generally harsh, nasty, or critical, and if there was almost no effort on the part of T and Ss to acknowledge/accept the 'validity' of other peoples' feelings/ideas, and behavior, score 6.

22. Minimally task-oriented-------------Extremely task-oriented
Refers to the degree to which emphasis was put on getting job(s) done well, etc. At high extreme (6), the task and task requirements seemed to be primary considerations, and decisions were heavily influenced by the task requirements. This rating refers to the resultant orientation and not to whether the impetus was from T or Ss.

23. Minimally person-oriented-----------------Extremely person-oriented
Refers to the degree to which emphasis was put on satisfying the personal needs of class members. Personal needs of Ss and T were primary considerations at high extreme (6). Decisions heavily influenced by requirements (or perceived requirements) of persons in class.

24. Never cooperative----------------------Very frequently cooperative
Refers to the frequency with which Ss worked together, helped each other, and shared ideas and things, etc.

25. Never competitive---------------------Frequently competitive
Refers to the frequency with which Ss seemed to be trying to outdo each other; or T encouraged this; or Ss discussed their relative performance or status.

26. Not at all business-like-------------------Extremely business-like
In a very "business-like" class, there was little extraneous, non-productive or counterproductive activity; there was an air of efficiency and smoothness of operation.

27. Friendly-------------------------------------Hostile
In a friendly class, T-S and S-S social interaction is accompanied by smiling and laughing. People in the class seem to like each other. Playfulness and affection may be evident (score 1). In a very hostile classroom, there may be one or more of the following: fighting, arguing, name-calling, frowning, sarcasm, nagging, or antagonism. A score of 6 would be approaching this, but would be less than the extreme implied by the above list.

28. Not at all carefree, jovial---------------Extremely carefree, jovial
At low end, no joking, laughing, smiling, etc., take place. At other extreme, laughter and joking take place while the Ss are working, and at other times. T treatment of subject-matter may include humor.

29. No rules in evidence------------------Many rules in evidence
At high extreme, rules may be displayed on bulletin board, or frequently referred to by T or Ss; e.g., silence during tests, no chewing gum allowed in classroom, etc. If there is no explicit evidence of rules, but some generally understood rules do seem to be operating, give intermediate score.

30. Quiet------------------------------Extremely noisy
At low extreme, there is little noise of any kind (not including background noise; i.e., blowers, noise from other rooms, bulldozers, etc.). At high extreme, there is much noise from Ss, T, and their activities (e.g., talking, singing, yelling, hammering, banging, rattling, rustling, scraping, scratching, squeaking, etc.).

31. Relatively devoid of stimuli------------------Full of stimuli
In a classroom full of stimuli, there is much to look at, hear, touch, and smell. At the high extreme, the number and variety of things may be almost overwhelming.

32. Repetitive----------------------------Extremely varied
In a repetitive class, there is little variety in the tasks, subject-matter is taught by drill, and the teacher uses the same basic method of teaching for all subjects (score 1). In an extremely varied class, the activities of teacher and students change frequently. There are differences in things done, subjects studied, methods of teaching and approaches to tasks (score 6).

33. Calm----------------------------------Excited
Refers to the degree to which the emotional tone of the class appears to be placid, unruffled, unperturbed, as opposed to a high level of emotional arousal, either of a negative sort (e.g., anger, hostility, etc.), a positive sort (happy boisterousness, eager involvement, etc.), or simply a high level of affective activation which may be neither positive nor negative.

34. Orderly--------------------------------Unruly
In an orderly class, activity shifts are smooth, Ss don't grab for supplies or materials, activities are carried out in a well-regulated way (score 1). In an unruly class, there are many interruptions in activities, activity shifts are very disruptive, there is generally some fighting, loud arguing, boisterous activity, horseplay, noise and/or confusion (score 6). (Different from 33 in that it is possible to be both orderly and excited about something, though possibly not unruly and calm).

35. Rigid regarding procedures------------------Extremely flexible regarding procedures
If T is unwilling to change the prearranged schedule of the day's work, or if Ss are unwilling to adjust to changes in their daily routine or approach to activities, score 1. In a class which is flexible, the Ss and T make frequent adjustments in their daily routine and their approaches to activities (score 6) (the high end includes situation where there doesn't seem to be a set routine).

36. Random sequence of activities----------------Orderly sequence of activities
When activities are selected by either the T or the S to fit the student's particular needs at a particular time, or if Ss flit from activity to activity with little apparent rationale, the activity sequence is "random", (score 1). When there is an orderly sequence of activities, the T (and possibly the Ss) know ahead of time which activities are to follow next; and activities follow one another in a carefully-planned series (score 6).

37. Behavior was not at all spontaneous----Behavior was extremely spontaneous
Refers to the degree to which behavior in the class seemed free, expressive, uninhibited, uncensored, unhesitant.

38. Untidy------------------------------------Very tidy
An untidy classroom is one in which paper and books are strewn on tables, desks, and floor. Bookshelves and other learning or interest centers are not neat, (score 1). A very tidy classroom is one in which "nothing is out of place." There may be visible signs of class regulations about neatness in the classroom (score 6).

39. Oriented to novel, unusual--------------------Not oriented to novel,
If T or Ss look for or bring up the exotic, paradoxical, strange, or unique aspects of any topic, etc., score 1.

* *

TEACHER RATINGS

40. T very energetic--------------------------T unenergetic
An energetic T is active, forceful, vigorous, constantly busy, etc.

41. T dry------------------T flamboyant, dramatic
A T with a dry manner speaks in a monotonous voice, gestures little, and shows little emotion. (It is possible for a T to be "dry" and alert at the same time.) A "dry" T is straight-forward, undramatic. A flamboyant or dramatic T has an expressive voice, eyecatching mannerisms, and easily holds the children's attention. (T "hams it up.")

42. T emphasized memory, rote------------T emphasized comprehension, analysis
When T emphasizes memory and rote learning, the Ss are expected to know and repeat subject rules, etc., verbatim; and their work closely reflects what the T presents.

A T who emphasizes comprehension and analysis prefers Ss to understand reasons, basic principles, etc., and to be able to explain what they learned and not to repeat material verbatim. T would also present own original thoughts and analysis.

43. T mostly critical (negative)--------------------T mostly praising

A mostly critical T points out errors while overlooking the good points of S(s) work (or criticizes more Ss than she(he) praises).

On the other hand, the T who mentions or emphasizes S(s) successes rather than weaknesses or failures (or, one who praises more Ss than she(he) criticizes), is a mostly praising T.

44. T not at all punitive--------------------------T punitive

A T who was punitive readily punished any deviation from expected classroom behavior. A punitive T elicited desired behavior through fear, etc. Punishment includes verbal chastisement, withdrawal of privileges and the like.

45. T spoke very rapidly----------------------------T spoke very slowly

46. T not at all warm-------------------------------T very warm

A warm T puts arm around children affectionately, or speaks kindly to them, etc.; this warmth is not just a reward for good behavior. T conveys liking for Ss.

47. T frequently used ridicule, sarcasm-------------T never used ridicule, sarcasm

If T used caustic remarks or made fun of the Ss to goad them into learning, express her dislike, maintain control, or to discredit S(s) contribution, score 1.

If no such methods were ever used, score 6.

48. T frequently consulted with individuals or small groups--------------------T never consulted with individuals or small groups

Refers to amount of time T functions as expert on call when Ss decide they need information and ideas; (i.e., when T acts as "resource person"); distinguish from #49.

49. T frequently gave individual attention----------T never gave individual attention

A T who gave individual attention frequently spoke to or worked with Ss on a one-to-one basis. T made an effort to go from one S to another to check on their progress and to offer assistance. To distinguish from #48, T *may* have been the one to initiate interaction.

50. T encouraged exploration------------------T discouraged exploration

The T who encouraged exploration provided books, materials, opportunities so that the Ss could learn, seek out new information, ideas, etc.; T actively promoted use of these materials and opportunities, and reacted positively to S-initiated exploration.

A T who discouraged exploration placed emphasis on sticking to the subject material covered, and inhibited or showed little interest in S-initiated exploration.

51. T protective, sheltering---------------T not protective

"Sheltering" refers to the extent to which T took steps to protect S(s) from any pain, discomfort, or embarrassment (e.g., T might try to neutralize embarrassment if an S gave an incorrect or inappropriate response), or T tried to prevent S(s) from being harsh to one another.

A T who is not at all protective is one who does not try to defend the Ss but allows them to be aware of their mistakes (not necessarily in a ridiculing or sarcastic way), and does not quickly stop fighting, scapegoating, etc.

52. T appeared uncomfortable----------------T appeared extremely comfortable, confident

If a T tended to be hesitant, ill-at-ease, tense, or anxious, score 1.

If a T appeared very comfortable with role, was not at all threatened by S questions, disruptions (presence of O), etc., and if T seemed very sure about what T was doing, score 6.

53. T spoke extremely clearly, coherently------T was vague, unclear, incoherent

Includes lucidity, organization, and physical qualities of speech: all factors that may enhance or disrupt communication.

If Ss exhibit failure of understanding by asking questions, lack of reaction, or in other ways, this may indicate poor communication.

54. T not at all permissive---------------------T highly permissive

A permissive T did not maintain tight control, to a large degree let Ss do as they wanted, seldom imposed limits, etc.

55. T unenthusiastic------------------T highly enthusiastic

A highly enthusiastic T conveyed a sense of commitment, involvement, excitement, and interest. T conveyed sense that what is going on is extremely worthwhile, interesting, and important.

56. T sensitive to Ss------------------------------T insensitive to Ss

A sensitive T is one who attempted to understand the reasons and motives for S's behavior. T attended carefully to what Ss said. T responsive to individual problems and needs.

57. T seldom exercised direct control------------------T almost always exercised direct control

Refers to the degree to which T was in active charge of, and overtly directing classroom activities. T took a direct and central role in class.

58. T seldom controlled indirectly---------------------T often controlled indirectly

Refers to the degree to which T maintained general charge of class activities without actively and overtly directing them. At upper extreme, T may have used subtle reinforcements to shape class directions, may have encouraged student participation (short of total control) - power was shared, but not given up.

59. T mostly lectures-----------------------------------T never lectures

T was almost always the presenter of planned lessons.

60. T often gave direct and immediate feedback----------------------------T seldom gave direct and immediate feedback

Refers to the degree to which T responded to S work or comments (not "conduct") with immediate information about correctness or incorrectness of approach, answer, etc.

61. T often used humor----------------------------------T never used humor

If the teacher often made remarks that made the Ss (or O) laugh or smile, told jokes, presented material in a humorous way, pointed out funny things that were happening, etc., score 1.

If there were no humorous remarks, etc., score 6.

62. T seldom laughed------------------------------------T often laughed

63. T promoted S independence, autonomy--------------------------T discouraged S independence, autonomy

If T encouraged Ss to make decisions, to be responsible for helping each other and to pursue, on their own, subjects that particularly interested them, then T promoted independence.

If T gave the impression that the Ss could learn only from T, rejected S suggestions, discouraged independent projects, etc., score 6.

64. T discouraged open S expressiveness-------------------------------T encouraged open S expressiveness

If T discouraged, ignored, or suppressed Ss' expression of their own ideas, feelings, needs, etc., then T discouraged open S expressiveness.

If T was pleased and interested when Ss explored new approaches to a topic, expressed their own ideas, feelings, needs, etc.; if T welcomed Ss' original solutions or suggestions, then T encouraged open S expressiveness.

65. T actively sought and accepted S procedural suggestions------------------T neither sought nor accepted S procedural suggestions

Refers to the degree to which T appeared actively interested in eliciting S feedback for developing class schedule, routine, procedure, etc.

66. T gestured very little---------------------------T gestured constantly

Refers to use of deliberate, purposeful arm, hand, head, or body movements, not nervous movements, etc.

67. T voice varied, expressive----------------------T voice monotone

T used differential emphases; changed volume, intonation, inflection, etc. A T who spoke in a monotone has relatively unvarying volume, intonation inflection, etc.

68. T accepted broad range of behavior----------------------------T accepted narrow range of behavior

At one extreme, T accepts a very broad range of S behavior; at the other extreme, T has a rigid set of expectations for acceptable behavior and tries to stop behavior that does not meet these expectations. An intolerant T would treat as discipline issues things that a tolerant T would treat as acceptable variations of style or approach. Include T response to noise, breakages, movement, individual pace, dress, emotion, speech patterns, cultural differences, etc.

69. T gave more attention to boys------------------T gave more attention to girls

70. T impatient---------------------------------------T very patient

Refers to the degree to which T shows anger or irritation or punishes Ss who are slow, sloppy, fail to understand, etc. A patient T tolerates varying paces, etc., repeats or rewords explanations, when needed, with no sign of irritation, weariness, or defensive hostility.

Teacher Description of Classroom Activities

Name________________________ School________________________

Please check the point within each of the following scales which most accurately describes your class. Please respond according to what actually happens, not what you think should happen, or what you would like to have happen.

Each scale has six points. We have labelled the two end points of each. You should check an intermediate point if: a) neither end is true, b) each end is true partially, or some of the time, or c) the two ends are combined in some way. For example, if an item were: 1 - The teacher cleans the blackboard..... 6 - The students clean the blackboard; you would check an intermediate point if a) neither cleans the blackboard, b) sometimes the teacher and sometimes the students clean it, c) the teacher and students work together to clean it.

If you have difficulty with any item, please mark it as best you can and write in any comments you have. Thank you very much.

(1)

1. Time Scheduling.

All classroom activities occur according to prearranged time schedule.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Nothing prescheduled; activities all occur as interests dictate.

2. Free time.

Almost all time is free for students to pursue own interests.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

There is little or no free time available (an hour or two a week at most).

3. Rule-making.

Classroom rules are made by the teacher.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Classroom rules are made by the children.

4. Rule-enforcing.

Classroom rules are enforced by the teacher.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Classroom rules are enforced by children.

5. Defining goals.

The children decide what they want to learn.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

The teacher (and/or school guidelines) determines what the children should learn.

6. Mobility.	Students leave the classroom with permission.	1 ____
		2 ____
		3 ____
		4 ____
		5 ____
	Students leave classroom freely without permission.	6 ____
7. Material development.	Most of the instructional materials used in this class are developed or adapted by the children.	1 ____
		2 ____
		3 ____
		4 ____
		5 ____
	Most of the instructional materials used in this class are developed by educational firms, or the teacher.	6 ____
8. Student choice.	Students choose what they want to work on.	1 ____
		2 ____
		3 ____
		4 ____
		5 ____
	The teacher determines the students' activities.	6 ____
9. Classroom arrangement.	Teacher decides on arrangement of classroom furniture and equipment.	1 ____
		2 ____
		3 ____
		4 ____
		5 ____
	Students decide on arrangement of furniture and equipment.	6 ____
10. Changes.	The arrangement of furniture and equipment has changed every week or so, this year.	1 ____
		2 ____
		3 ____
		4 ____
		5 ____
	The arrangement has changed once or not at all.	6 ____

---

11. Study places.

Each child works mostly at his own desk or table.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

All work is divided among a variety of places (centers) in and out of the classroom, with no "home base" seat.

---

12. Other adults (not aides).

Parents or volunteers participate in activities in the classroom 15 hours per week or more.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Parents or volunteers participate in activities 1 hour per week or less.

---

13. Peer help.

Students frequently help one another in class.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Students do not help one another in class.

---

14. Class as whole.

On a typical day, teacher attention is directed to the class as a whole 3/4 of the time or more.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Attention directed to class as whole almost never.

---

15. Subgroups.

On a typical day, teacher attention is directed to subgroups of the class 3/4 of the time or more.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Attention directed to class subgroups almost never.

---

16. Individuals.

On a typical day, teacher attention is directed to individual students 3/4 of the time or more.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Teacher attention is directed to individual students almost never.

---

17. Resource role.

The teacher acts as a "resource person" to whom students working on projects come when seeking information and ideas 3/4 of the time or more.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Teacher almost never acts as a "resource person".

---

18. Discussion leader. (student topics)

On a typical day the teacher acts as a discussion leader on topics initiated by students 3/4 of the time or more.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Teacher almost never acts as a discussion leader on topics initiated by students.

---

19. Discussion leader. (own topics)

On a typical day the teacher acts as a discussion leader on topics of his/her own choice 3/4 of the time or more.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Teacher almost never acts as discussion leader on topics of own choice.

---

20. Planned lesson presenter.

On typical day, the teacher gives prepared oral presentations 3/4 of the time or more.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Teacher almost never gives prepared oral presentations.

---

21. Approaches to learning.

Students develop and use their own methods of learning and solving problems.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

The teacher describes or demonstrates effective methods for learning and solving problems.

22. Participation. A student may choose not to participate in any class activity.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Students are expected to participate in all class activities.

23. Independent study. There is almost no independent study time available (i.e., without specific assignment).

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

At least one hour of independent study time is available every day.

24. Subgrouping. Students group themselves according to their own criteria.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

The teacher places pupils in appropriate subgroups.

25. Subgroup changes. Subgroups do not change more than two or three times during the school year.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Subgroups change every two or three days or more.

26. Evaluation focus. Evaluation procedures are the same for all students in the class; same standards used for all.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Evaluation procedures are different for each student.

27. Evaluation planning. The teacher plans all evaluation procedures.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Students participate in planning all evaluation procedures.

---

28. Activity planning. Students plan the sequence of their individual and group activities.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

The teacher plans the sequence of individual and group class activities.

---

29. Different activities. Many different activities are almost always going on simultaneously.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Almost all the time the children are all engaged in the same activity.

---

30. Material use. Children are expected to use materials as instructed.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Children are free to experiment with and manipulate materials as much as they like.

---

31. Observability. Children are almost always within sight of teacher.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Little effort is made to keep children within sight of teacher.

---

32. Task initiation. The teacher usually starts children on their tasks.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Children usually start themselves on tasks.

---

33. Plan changing. Classroom and lesson plans are stable, not usually subject to change.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Plans are changed very frequently.

---

34. **Discussions.**

If children are interested, discussion are allowed to wander off in any direction.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Discussions kept closely related to topic being considered.

---

35. **Procedures.**

The teacher determines almost all classroom procedures.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Students determine almost all classroom procedures.

---

36. **Talking.**

Students may talk at any time without being called on or "recognized".

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Students may talk in class only when called on.

---

37. **Help with work.**

Almost all help is initiated by students asking for it.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Almost all help is initiated by the teacher's seeing the need for it.

---

38. **Evaluation.**

Only the teacher evaluates student work.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Students participate in all evaluations of their work.

---

39. **Problems.**

Children get immediate help with any problems.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Children are expected to solve most problems themselves.

---

40. Personal expression.

Children spend one or two hours a day talking about personal experiences, beliefs and opinions.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Children spend an hour a week or less talking about personal experiences, beliefs and opinions.

---

41. Main directing force.

The teacher provides the main directing force in the class.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

The children provide the main directing force in the class.

---

42. Getting materials.

Each child can get material or equipment out at any time.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Each child can get material or equipment only during designated periods, or with permission.

---

43. Rule clarity.

This class has numerous rules for acceptable behavior.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

There are very few rules for behavior in this class.

---

44. Commonality.

Learning objectives are the same for all children in the class.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Learning objectives are set for each child separately.

---

45. Pacing.

Most class activities during the day require children to work at about the same pace; topics are expected to be mastered by specified times during the year.

1 ___
2 ___
3 ___
4 ___
5 ___
6 ___

Each child works at his or her own pace, with no timing objectives.

46. Conflicts or arguments.

Conflicts or arguments between children are stopped quickly by the teacher.

1 ___
2 ___
3 ___
4 ___
5 ___
6 ___

Children are expected to resolve their own conflicts or arguments.

47. Best work.

Each day, the children who did the best work get public recognition for it in class (e.g., by posting on bulletin board).

1 ___
2 ___
3 ___
4 ___
5 ___
6 ___

The class is never informed which children did the best work.

48. Movement in class.

Children move around the classroom at will.

1 ___
2 ___
3 ___
4 ___
5 ___
6 ___

Children leave their seats only during designated periods, or with the teacher's permission.

49. Organization of tasks.

Most learning tasks in this class have a clear step-by-step organization and sequence.

1 ___
2 ___
3 ___
4 ___
5 ___
6 ___

Most of the learning tasks are "open-ended".

---

50. Memorization.

None of the work in this class involves memorizing.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Most of the work in this class involves memorizing.

---

51. Basic principles.

Children spend most of their time trying to discover and apply basic principles.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

Children spend little time discovering and applying basic principles.

---

52. Task emphasis.

The importance of getting work done and done well is frequently stressed in this class.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

There is little overt emphasis on getting work done and done well in this class.

---

53. Time in groups.

The children do almost all their work as individuals or as a total class.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

The children do almost all their class work in small groups.

---

54. Evaluations of each other's work.

The children do not evaluate each other's work.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

The children evaluate each other's work very frequently.

---

55. Decisions about needs.

The teacher decides what specific tasks the children need to work on at any given time.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

The children decide what tasks they need to work on at any given time.

56. Emphasis on enjoyment.

Very strong emphasis is put on having a pleasant, happy and friendly time in this class.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

There is little overt emphasis on having a pleasant, happy and friendly time in this class.

57. Amount of testing.

There is virtually no testing in this class.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

There is some testing every day or two in this class.

58. Ability mixture.

Children are not grouped according to ability or achievement level in this class for any subject.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

The children in this class are grouped according to ability or achievement level for all subjects.

59. Planning sessions.

Teacher and children participate in joint planning sessions several times a week.

1 ____
2 ____
3 ____
4 ____
5 ____
6 ____

There are no joint planning sessions.

60.	Homework.	The children in this class never have homework. All children in this class have homework to do every day (including weekends).	1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____
61.	Number of teachers.	Please write in the number of teachers who give instruction to the children of your class during the course of a typical day.	____
62.	Number of room changes.	Please write in the number of times the children in your class change rooms during a typical day.	____
63.	Number of "departmentalized" subjects.	Please write in the number of subjects taught to your children on a "departmentalized" basis (i.e., different subjects with different teachers).	____
64.	Hours with class.	Please write in the average number of hours per day that you spend with the children in your own class (or "homeroom" or "core" if these apply).	____

Teacher Views of Students (Rating Form)

On the following pages, we have listed the children in your class who are participating in our study and have also listed a series of attributes. We would like you to make judgments about each of the attributes for each child, relative to the other children in your class, and to assign ratings according to the following key:

a rating of 1 indicates that the attribute is not at all or only slightly characteristic of the child (compared with others in the class)

a rating of 2 indicates that the attribute is moderately characteristic of the child (compared with others in the class)

a rating of 3 indicates that the attribute is substantially characteristic of the child (compared with others in the class)

a rating of 4 indicates that the attribute is highly or extremely characteristic of the child (compared with others in the class)

Please write the appropriate numbers in the spaces after each child's name for each of the judged attributes. If a child has changed during the year, the rating should refer to his or her status at the present time. It would be best to rate all children on one attribute, then all children on the next, and so on. Please try to think about each attribute separately, without regard for how you may have rated any of the others. Since the ratings are to be relative to the children in your class, each rating score should be assigned to at least a few children for each attribute.

Those of you who have team arrangements can divide the task so that each teacher rates the children in his/her own homeroom (or any other division you agree on).

Thank you very much.

Name of Student																			
Highly active, energetic																			
Learned much this year																			
Self-controlled																			
Curious about many things																			
Works well with other children																			
Not satisfied until good understanding of topic or task is achieved																			
Highly involved in class activities																			
Perseveres with tasks																			
Looked up to by other children																			
Cooperative, does what is asked																			
Works hard in class																			